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Strategies for Success

A Profile of Growing Small and Medium-sized Enterprises(GSMEs) in Canada

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Strategies For Success

A Profile of Growing Small and Medium-sized Enterprises (GSMEs) in Canada

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Table of Contents

Table of Contents - Continued

Page

Figures

Table of Contents - Continued

Text Tables

Table of Contents - Continued

Preface

This study is part of the research program developed by the Firm Strategy and Adaptation Project. Originally started as a partnership between the Economic Council of Canada and Statistics Canada, the project is being completed under the auspices of Statistics Canada. The project is examining different aspects of the nature of structural adaptation in the Canadian economy and the importance of innovation and technological adaptation.

An important aspect of that change is the increasing share of employment provided by small firms. This study investigates some characteristics of a group of growing small firms and asks whether there are discernible differences in the characteristics of the more-successful and the less-successful members of this group.

The study finds that innovation strategies and activities are the most important factors that distinguish the more-successful from the less-successful firms. Almost all of the strategy questions related to these issues receive higher scores from the more-successful group of firms than from the less-successful group of firms.

Stewart Wells
Assistant Chief Statistician
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The research contained herein is based on a survey that was initiated by Entrepreneurship and Small Business of Industry Canada in partnership with the Economic Council and Statistics Canada, as well as the Conference Board of Canada, who jointly developed the framework and survey for the study. The survey was conducted by the Small Business and Special Survey Division of Statistics Canada. The editing, tabulations, and analysis were done in the Business and Labour Market Analysis Division of the Analytical Studies Branch of Statistics Canada.

We are grateful to comments from Fred Gault of the Services, Science, and Technology Branch in Statistics Canada, John Skelton and Lucie Boily of Industry Canada, members of the Economic Growth Project of the Canadian Institute for Advanced Research, the National Institute for Economics and Social Research in London, Anthony Arundel of MERIT in Maastricht, David Stambrook of the Canadian Labour Force Development Board, and from audiences at Statistics Canada, the Canadian Labour Market and Productivity Centre, Industry Canada, Employment and Immigration Canada, the Ontario Ministry of Finance, the Ontario Ministry of Trade and Technology, the Centre Inter-universitaire de Recherche sur la Science et la Technologie in Quebec, and the School of Business and Economics at Wilfred Laurier University. Nothing in this document necessarily reflects the views of any of these groups.

Finally, it should be noted that the project would not have been feasible without the support of Stewart Wells, Assistant Chief Statistician, Michael Wolfson and Garnett Picot of Statistics Canada, and Judith Maxwell of the Economic Council.

John Baldwin

Highlights

Highlights

This study has two purposes. The first is to provide a profile of growing small- and medium-sized enterprises (GSMEs) by measuring the importance that they attribute to certain strategies and the magnitude of associated activities. The second is to investigate how the more-successful and the less-successful firms differ in terms of firm strategies and activities.

An Overview of Small-Firm Strategies and Activities

The picture of GSMEs provided by this survey shows that the self-perceived strengths of GSMEs are diverse. GSMEs feel that they possess advantages that are traditionally attributed to small firms—flexibility of response to customer needs, quality of product, and customer service. Nevertheless, these are not the only areas in which they feel that they excel. The study shows that GSMEs have a management strategy that stresses total quality management and, where applicable, process and just-in-time inventory control. Marketing, along with management and skilled labour are the three most important factors in explaining success. GSMEs stress that solving the cost-of-capital and the access-to-capital problem are both regarded as important explanations of their success.

In addition, GSMEs have focused on what are often regarded as chronic problems in the area of training and innovation. They are conscious of the need for a highly skilled work force and rank themselves above their competitors in this regard. They have extensive training programs. They have placed a high value on solving the problem of capital cost and access to capital. Retained earnings, in turn, account for the majority of equity. They are active innovators stressing new products, new technologies, and new-materials usage. While most investment is in the form of expenditures on plant or machinery and equipment, a substantial proportion of the investment budget is devoted to the critical areas of research and development (R&D) and training—intangible investment. GSMEs spent some 23% of all investment in these areas in 1989.

Particular findings of the survey are:

Functional Strategies

1) Management Practices

Management skills and advanced management practices are stressed above all other strategies. Strategies to improve management practices are targeted towards a comprehensive system approach. Total quality management and innovative organizational structures receive the greatest emphasis.

2) Human Resources

The quality of the labour force is a priority for GSMEs. Skilled labour is ranked just after management skills in explaining growth. GSMEs also rank the skill levels of their employees as being superior to their competitors. Their human-resource strategy focuses on continuous staff training. The average share of investment expenditures for staff training of GSMEs is about 8% between 1989 and 1991. Some 52% of firms give their employees training.

3) Marketing

Marketing plays a central role in small firms. GSMEs rank marketing second only to management and labour skills in explaining their success. They rank themselves above their competitors with regards to quality of product, flexibility in responding to customer needs, and customer service. Marketing expenditures account for about 23% of total investment for the period 1989-91.

4) Financing

The cost of capital and access to capital are both regarded by GSMEs as important explanations of their success. GSMEs utilize relatively more long-term capital than short-term capital. They use more equity than debt. They also have substantial retained earnings.

Developmental Strategies

1) The Importance of Innovation

GSMEs are innovative in a broad sense. They stress technology over R&D capability. While between 15% and 18% of investments go into R&D on average between 1989 and 1991, and R&D-to-sales ratios are healthy relative to those of the population of business firms as a whole, these R&D-based data underestimate the innovative capacity of GSMEs. A larger proportion of GSMEs attribute success to innovation strategy (30%) than report R&D expenditure (12%). An even larger proportion (55%) report that they introduced an innovation, though only a small portion of these innovations originated in a formal R&D unit.

A substantial proportion of GSMEs regard the introduction of new products or entering new markets as crucial. Developmental strategies in both the area of marketing and technology demonstrate that a large percentage of GSMEs have adopted an aggressive strategy involving new products and technologies. A large portion focus their marketing efforts on introducing new products and/or penetrating new markets. In the area of technology, a large percentage are adopting new technology, refining it, or developing their own new technology. In the area of production strategies, a significant proportion are turning to new materials for cost savings.

2) Sources of Innovation

Although GSME innovation comes from both outside and inside the firm, these firms are generally outward-oriented in terms of the importance attributed to the different sources of innovations. Important outside sources are customers and suppliers; inside sources are management, marketing, and the production department. Innovation strategy does not focus exclusively or even mainly on R&D strategy. Instead, technology strategy is given more emphasis.

3) Input Utilization

Input-utilization efficiency is targeted towards cutting labour costs. Improving labour utilization is at the heart of the productivity strategy being followed. Nevertheless, a large group of GSMEs stress the importance of a strategy that uses materials more efficiently.

4) Marketing Orientation

GSMEs are outward-oriented. They sell a large percentage of their products outside their home province to other Canadian regions. They are active participants in export markets.

5) Government Programs

Government aid is not viewed as important by many GSMEs. However, the programs that are valued most by the largest number of firms are the ones with clear externalities—government-information services and training programs. Two regions present a picture that differs from the national totals. GSMEs in the Atlantic region place greater emphasis on government procurement and market-information systems, but less on R&D incentives; Quebec firms place greater emphasis on R&D and export incentives, but less on training than is the case elsewhere.

Distinguishing Traits of the More-Successful Firms

The second objective of this study is to provide a standard for the evaluation of the strategies and activities adopted by GSMEs. This is done by investigating the difference between the policies and activities that are followed by the more-successful and by the less-successful firms.

Success is measured in two ways. First, a measure of general or overall success is defined in terms both of a firm's gain in market share and its profitability growth relative to the industry. Second, a measure of success is defined in terms of profitability only. The sample of GSMEs is then divided into two categories on the basis of the score that a firm receives from each measure, first from the general-success measure and then from the profitability measure. Finally, the scores on strategies and the intensity of activities for the top and bottom group of firms are compared.

Innovative Activity and Success

Innovative activities are the most important determinants of general success; that is, for a wide range of industries, they serve to discriminate between the more- and the less-successful firms better than any other variable. Almost all of the strategy questions that relate to innovative activity receive higher scores from the more-successful group of firms than from the less-successful group of firms. This is also the case for innovative activities—whether a firm possesses an R&D unit, its expenditure on R&D relative to total investment, and its R&D-to-sales ratio.

Large significant differences in the scores attached either to strategies or to activities are not found in most other areas—management, labour skills, quality of product, flexibility of operations. Thus, the ability of a firm to grow relative to its immediate competitors and to increase its profitability relative to the industry mean reflects policy choices, primarily but not exclusively, in areas that reflect innovative activity.

Firms have to solve a number of problems to stay in the competitive race. Doing well in management, human resources, financing, and other areas that receive high scores from all GSMEs is a necessary condition for being successful. It is not a sufficient condition for winning. Solving a key set of problems relating to innovation provides the impetus that pushes some firms ahead of others and allows them to win the competitive race rather than just to finish in the middle of the pack.

The general strategies where scores are significantly higher for the more-successful than for the less-successful firms are: R&D capability, in particular pursuing an R&D research agenda; accessing

new markets, in particular export markets; the frequency with which new products are introduced; technological capability, in particular obtaining new technology, either by developing new technology, refining the technology of others, or improving own technology; controlling production costs, in particular by using new materials, reducing energy costs, and using existing materials more efficiently; and finally by making use of government programs, in particular those providing R&D and export assistance.

Labour Skills, Training Activity, and Success

In contrast to innovation-related matters, labour issues play much less of a role in discriminating between the more-successful and the less-successful. Long-term success, in terms of change in market share, depends on innovative capabilities in a number of different areas, but not on the importance that management attributes to labour skills.

Training expenditures matter, but in a fashion that was not originally predicted. Higher expenditures per employee trained are negatively associated with growth in market share and with profitability. Quality and balance are required when it comes to training, rather than just greater intensity.

Capital Structure and Success

The capital structure of GSMEs differs across firms when they are grouped according to both the general-success and the profitability measures. The more-successful and the more-profitable firms make less use of internally generated funds. They substitute less-expensive long-term capital for expensive equity funds. This could be the result of the normal operation of the financial system or of particular problems faced by growing small firms. If internally generated funds have a high opportunity cost, growth that provides the financial system with a well recognizable signal will be rewarded with less-costly sources of long- and short-term debt. If there are capital-rationing problems that are resolved by the most-successful entrepreneurs, then the most-successful firms will resolve these problems by substituting less-expensive forms of capital for internally generated funds that come from retained earnings.

Government Policy and Success

A firm's evaluation of the importance of government programs is associated with overall success even though the sample of firms, on average, gave little importance to these programs. Differences in the ranking of R&D tax and export incentives between the more- and less-successful firms are found to be large and significant—probably because such a ranking is correlated with the use of R&D and successful export performance, both of which are strongly correlated with success. Of interest, as well, is the positive correlation between success and the use of traditional programs such as market-information services and industrial support. The more-successful firms tend to value these programs and, therefore, utilize them more intensively than the less-successful firms. Governments do not have to pick winners under these circumstances. There is a self-selection process that leads winners to choose these government programs.

In contrast, government training and procurement programs are inversely related to the degree of success. More firms have tried these programs than others; the overall ranking is as high as for market-information services, but the association with market share is exactly the opposite to that for the other programs. The results for procurement are not surprising. The results for training, while perhaps surprising, are compatible with the difference that was found between the training activities

of the more-successful and the less-successful group of firms. The more-successful group of firms is not characterized by greater training intensity and, therefore, this group does not place a greater value on government training programs.

Industry Differences

When results in individual industries are examined, it is evident that the innovation strategies that matter differ across industries. For manufacturing, the more-successful firms scored higher in R&D-innovation capability and for the emphasis placed on the development of new technologies. The more-successful firms in business services placed a significantly greater importance on technological capability as a growth factor, improvement of own technology as a technical-development strategy, total quality management as a management-development strategy, and the use of both new and existing materials as an input-development strategy. The more- and less-successful firms in the construction sector significantly differ on the stress placed on improvements in own technology. The retail sector differs because of the stress on access to new markets. The primary sector differs most in its emphasis on further refining the technology of others.

The industry-level analysis also demonstrates that, in categories where there are no statistically significant differences when firms from all sectors are considered together, significant differences emerge in some sectors when examined alone. In particular, when all industries are considered together, the more-successful firms do not give higher scores to human-resources strategies. When individual industries are examined, however, the more-successful firms in some industries give higher scores to questions related to human resources. In the business-service sector, there are significantly higher mean scores given to skilled labour and the human-resource strategy of continuous staff training. In the wholesale sector, the average score given to management and to the human-resource strategy of innovative-compensation packages is higher in more-successful firms. In the retail sector, there are differences in the importance attributed to utilizing skilled labour. The more-successful firms in dynamic and traditional services (accommodation and food services, real estate) place a greater stress on continuous staff training. Innovative compensation packages receive greater emphasis by firms in the primary, wholesale, and dynamic-service sector. The construction sector is unique in that the more-successful firms rank themselves behind their competitors with regards to labour climate. They also place a significantly lower score on government training programs.

The industry-level analysis also reveals that innovative strategies and training are complementary. In some industries, the more innovative firms also tend to stress training. In these cases, training is an integral part of a successful innovative strategy.

Strategies for Success

1. Introduction

Small- and medium-sized enterprises (SMEs) are an essential component of the Canadian economic system. In recent years, they have come to account for a larger and larger percentage of total employment. Between 1978 and 1989, firms with less than 500 employees increased their share of employment from 56% to 63%.[1] To some extent, this is the result of an increase in the importance of the service sector relative to the manufacturing sector. Firms in the service sector are, on average, smaller than in manufacturing; however, even in manufacturing, small firms have been increasing in importance in a large number of industries. The greatest change has occurred in manufacturing industries where new flexible technologies have been introduced.

Small firms then form the dynamic backbone of the modern economy. Nevertheless, small firms are regarded as being vulnerable and subject to the vicissitudes of the business environment. Large firms are often considered to have the ability to ride out difficult economic times and even to be able to influence the environment that affects them. Small firms are seen to possess certain innate advantages that are offset by critical failings.

Despite the growing importance of small firms, more effort has been devoted to studying the strategies of large than of small firms. There are several reasons for this. First, size has been equated with success and, thus, large firms have garnered more attention than small firms. Second, it has been easier to accumulate meaningful knowledge about the strategies and strengths of larger firms. When only one or two firms dominate an industry, case studies can provide representative information. Case studies of large firms have, therefore, been used to provide a rich description of the characteristics of larger successful firms and the strategies that have apparently led to success.[2] While shedding considerable light on areas of special interest,[3] case studies are less appropriate as tools to investigate the much larger and more diverse population of small firms. Larger samples than are normally associated with case studies are required if generalizations are to be made about the small-firm population.

Of those studies that use a cross-section of small firms, most have tended to focus on a specific area, such as the relationship of financing, training, R&D, and exports to performance.[4] There are fewer investigations of the way in which a broad range of strategies and activities are combined—the type of material that is normally produced in a case study.[5]

This study investigates both strategies and activities of successful SMEs. It focuses on the tactics used by small firms to make themselves successful and also on the activities used to implement these strategies. It explores broad functional areas of management, marketing, financing, and human-resource development, as well as more specific questions on innovation, training, financial structure, and the use of government programs.

Since there are a very large number of small firms and a broad coverage across regions and industries was desired, a survey was used. This survey was supplemented with administrative data on sales and profitability that separately allow the performance of the firms in the sample to be evaluated.

2. The Focus of the Survey

2.1 The Research Agenda

The success of small firms is said to depend on their ability to produce a high-quality output for special markets; their comparative advantage is the flexibility associated with a lean organization that allows them to provide quick and efficient service. It is claimed that small firms are close to their customers, that they can quickly tailor their products to changing customer demands, and that their success is due in large measure to quick decision-making, simple administrative structures, and flexible operations.[6]

Despite these recognized advantages, many problems are said to afflict the small-firm sector. Difficulties in small- and medium-sized enterprises (SMEs) are attributed to managerial failure, problems in attracting and keeping qualified personnel, having to pay higher prices for intermediate inputs such as supplies and energy, use of outmoded technology, and limited financial resources.[7] The financial problems of SMEs are perhaps the most frequently quoted. SMEs are described as having a "deficient financial structure"[8] or as being "undercapitalized".[9] Finally, the ability to plan a marketing strategy is said to be lacking in the SME sector.[10] Others suggest that market research is generally beyond the reach of SMEs, that they have problems in securing capital, that they are constrained in their abilities to innovate and adopt new technology, that recruitment of highly qualified staff is a problem, and that willingness to adopt new technology is low.[11]

The perception of the importance of the small-firm sector and the problems associated with the growth of small firms has resulted in the development of special policies that are provided by all levels of government. Some programs are aimed at imperfections in capital markets; others at deficiencies in labour skills; still others at the type of research and development facilities that are needed to produce innovative products. To these ends, financial support is provided for capital, for training, and for research and development expenditures.

The appropriate design of these programs requires an understanding of those factors that are associated with success in small firms and with the problems that these firms face, which in turn demands a detailed picture of what successful small firms do and of the factors that impede growth. On the one hand, this involves information on the type of capital, the mix of labour, and the way in which innovation occurs—a description of how firms combine inputs. On the other hand, it necessitates the collection of information on the strategies that firms adopt. Strategies include more than the nature of inputs used. They involve the type of marketing, organizational, production, technological, innovation, and human-resource decisions taken by the firm.[12]

This study focuses on three separate but related sources of information about the firm: its strategies, activities, and characteristics.

Strategies encompass the overall organizational plan that is adopted to meet the firm's goals. These strategies require decisions on structure, task assignment, and the implementation of certain activities. For example, the goal of creating innovative products that sell for a premium price requires decisions on product design, research facilities, organization, and expenditures on scientific personnel.

Activities are the tasks that are required to implement strategies. They involve financing, hiring and training personnel, purchasing technology and capital equipment, establishing research and development facilities, coordinating and monitoring personnel. The manifestation of these decisions is the capital stock of a firm, its source of financing, the occupational structure of a firm, the training programs implemented for employees, and the expenditures on research and development.

Characteristics of firms are those traits that are the result of past strategies. They are neither goals nor tasks. They encompass such factors as the ethnic or educational background of the manager, the governance structure of the firm, the geographical diversification of sales of the firm.

Figure 1 illustrates that characteristics, activities, and strategies interact to affect the competitiveness of firms. While the causal effects presented in this diagram flow in both directions, the link from strategies to activities is more direct than the reverse. On the one hand, the strategies chosen by a firm will be immediately reflected in the activities and characteristics of the firm. For example, a high-tech innovative strategy will be manifested in some activity, perhaps the establishment of an R&D activity or the acquisition of managers who have had engineering/scientific training. On the other hand, there is an indirect and less immediate feed-back from activities and characteristics to strategy chosen. A firm with a history of innovation that is related to the skill of its work force or the culture and attitudes inherent in its management may find it easier to move in new strategic directions as technology changes. In this case, past activities will condition the efficacy of future strategies and influence the likelihood of their adoption.

The research agenda of this study is based on the supposition that there are a set of strategic competencies that are associated with success. Firms that have found the appropriate combination will do better than others. Isolating those firms that have recently done better than others and asking what differentiates them from others should reveal which competencies are causally related to success. This approach presupposes that winning strategies may be modified as circumstances change, but that they will not be discarded completely. It also assumes that information flows are imperfect—that losers do not adopt instantaneously those policies that create success in winners.

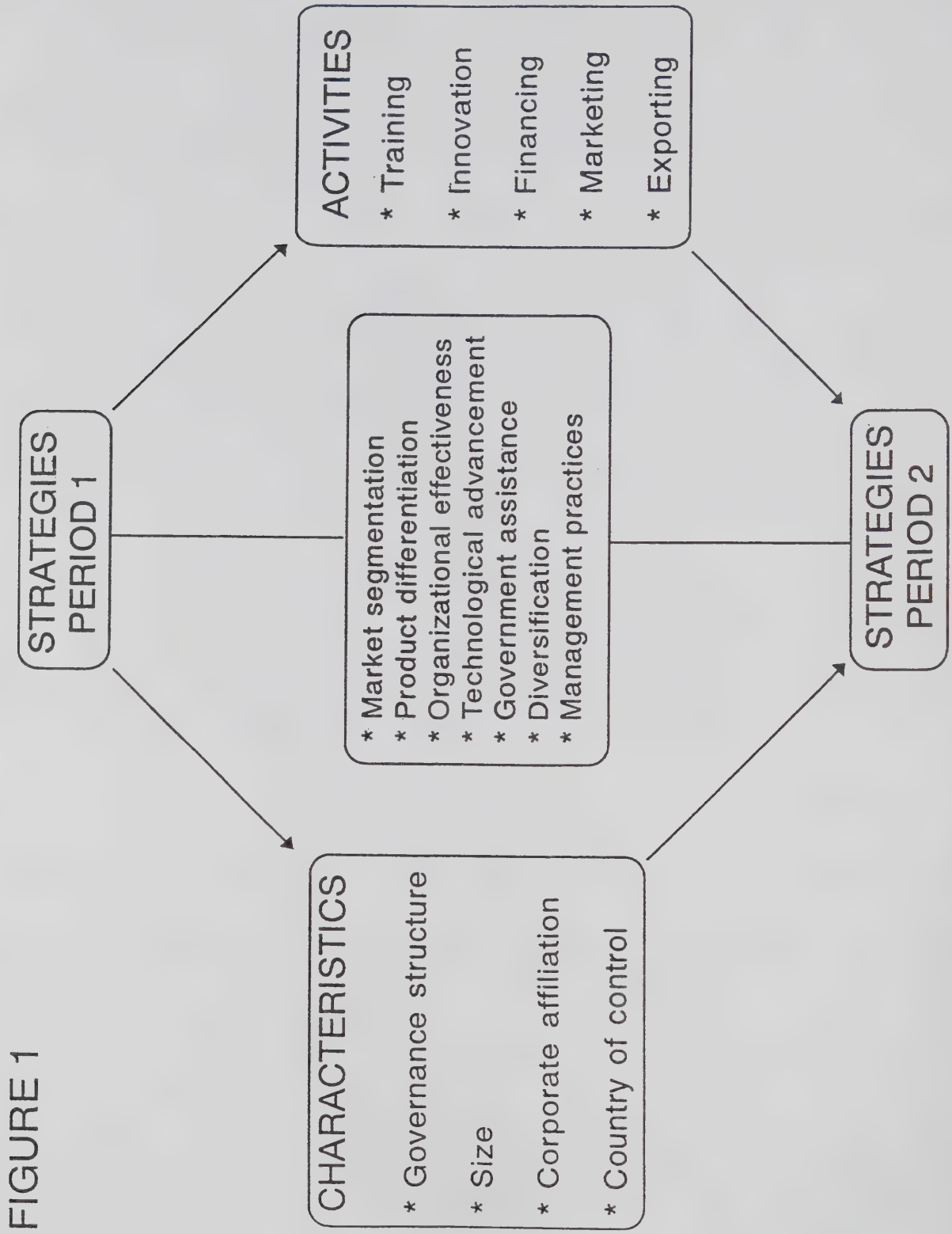
2.2 The Questionnaire

The survey questionnaire focused its attention on each of three areas: strategies, activities, and characteristics.

Information on strategies was sought because strategies directly reveal goals of firms. There are two problems that must be resolved before useful information can be generated on the strategies of small firms. The first task is to generate a meaningful list of questions. Fortunately, progress has been made in developing useful taxonomies for surveys in this area.[13] The second is to obtain answers that do not vary with the function of the respondent. Surveys that concentrate on strategies are regarded by some as problematic since intentions may not be accurately captured when a firm is large and there are different perceptions within senior management of the goals of the firm. This problem is reduced in this study, relative to others that use mail surveys, since the focus is on relatively small firms where the goals of a firm are likely to be well understood by most individuals in the firm, or at least by those in the management category who were the respondents to the survey.

While information on strategies is important, it alone fails to provide a benchmark against which actions can be judged. Information on activities reveals how the strategies are transformed into actions.

FIGURE 1


STRATEGIES PERIOD 1
ACTIVITIES
* Training
* Innovation
* Financing
* Marketing
* Exporting
* Market segmentation
* Product differentiation
* Organizational effectiveness
* Technological advancement
* Government assistance
* Diversification
* Management practices
CHARACTERISTICS
* Governance structure
* Size
* Corporate affiliation
* Country of control
STRATEGIES PERIOD 2

For example, if firms indicate they value innovation, it is important to measure which innovative activities are actually funded or the method for acquiring innovative products.

The survey concentrates on three areas for which data are readily easy to assemble: the capital structure and the source of funds, the occupational structure, and the form of innovative activity. It also provides data on training activity, an area where previous surveys of large firms have often had trouble obtaining information, because large companies often do not segregate expenditures on training from other costs, and their ability to estimate total training expenditures is limited. It was felt that this survey would not have the same problem since small firms, because of their very size, have a better appreciation of expenditures in this area.

Appendix I contains the questionnaire. The first section of the questionnaire investigates the general characteristics of the firms and profiles their regional location, ownership structure, country of control, their involvement in mergers and strategic alliances, and their sales.[14] These variables set the boundaries of a firm's operations, determine the type of growth possible, and influence the overall mission of the firm.

The second section of the questionnaire examines the firms' operational, organizational, and financial activities. Activities in these areas reflect previous strategy choices, provide evidence on the degree of expertise available in the firms, and suggest the potential for future success. To this end, the export orientation, the capital structure, the source of financing, the employment composition by occupational category, the investment intensity in R&D and marketing, the sources of innovation, and the training policy of each firm are all investigated.[15] These questions develop information on the competencies that are associated with the strategies that are adopted. These capabilities, along with the inherent characteristics of the firms, create the conditions that determine the cost and likely success of the strategies that are being pursued.

The third section of the questionnaire investigates firm strategies with three separate but complementary questions. In one question (# 10), firms are asked to rank the importance of different factors explaining the growth of their company (growth strategies). These include management skills, marketing capability, cost of and access to capital, technology skills, R&D-innovation capability, and labour-force skill levels.

In another question (# 11), firms are asked to provide an assessment of their position relative to their main competitors with regard to price, cost, quality, customer service, labour climate, and skill levels of employees. A firm's perception of its position vis-à-vis its competitors reveals the strengths and weaknesses of the organization.

In a third question (# 9), firms are asked to score the importance of selected options that contribute to their general development. The developmental tactics pursued by the firm are grouped into marketing strategy, technology strategy, inputs-sourcing strategy, management practices, and human-resources strategy. Questions on marketing strategy investigate the firm's emphasis on existing or new products and markets. The technology segment investigates the firm's ability to improve and apply new and existing technologies in its production process. The inputs-sourcing subsection explores the firm's emphasis on production efficiency. The management-practices section examines the firms' organizational policies and systems of control. Questions on human resources delve into the method used to enhance the effectiveness of personnel.

Finally, question# 12 asks firms to indicate which of several government programs they used and to score their importance to the firm. These programs include training, market-information services, export incentives, industrial support, procurement, and R&D tax incentives. By evaluating their importance, firms provide an invaluable picture of their preferences for the amount and direction of public support.

2.3 Research Methodology

This survey builds on previous studies in many areas. It differs in the extent to which it integrates questions on activities with strategies and then relates the two to objective measures of success. On the one hand, it incorporates parts of surveys that investigate only the average level of activities such as expenditures on training and on research and development.[16] On the other hand, it incorporates information on strategies that allows investigation of the directions being followed by small firms that are positioning themselves to deal with competition. Some related surveys have examined how the activities of a firm, for example in the technology area (Lefebvre, Harvey and Lefebvre, 1991), are linked to specific strategies being followed. Others (Lefebvre and Lefebvre, 1992) have investigated how certain characteristics of the firm are associated with strategies; for example, how the characteristics of owners vary with the importance given to innovation. The objective of strategy-based surveys is generally to investigate how success and activities are interrelated. In some cases, success is just assumed to be associated with technological capability and the relationship between technological adoption and firm characteristics is examined (Lefebvre, Harvey and Lefebvre, 1991). In other cases, success is inferred from the type of strategy being followed: from answers to certain strategy-related questions, firms are classified on the basis of their advantages with respect to just cost, just product differentiation or cost as well as differentiation, and the type of technological policy being followed by each group is investigated (Lefebvre, Langley, Harvey and Lefebvre, 1992). Another set of studies (Franko, 1989; Morbey, 1988; Morbey and Reithner, 1990) investigates the relationship of R&D policies to successful sales performance of a firm.

This survey presents the picture given by the average respondent with regards to a broad range of policies. It incorporates technological, human-resource, and financing strategies into a broader context of management, marketing, and product-differentiation strategies; but it also divides the responses in these areas into those from the more-successful as opposed to the less-successful group of firms. One approach, which gives the profile of the average firm's response, shows whether firms place more or less importance on one strategy or on one activity compared to another. From this, inferences are often drawn about the policies that are desirable or successful. This approach is not without merit. It reveals how businesses feel about priorities. Unfortunately, these self-evaluations may not be very useful in distinguishing more-successful from less-successful policies and activities if they do not reveal much about the characteristics or attitudes that are actually associated with success.

Self-evaluations are problematic because they may be biased. For example, questionnaires that are answered by managers of small firms may give unduly high scores to the importance of managers. If this is the case, it is difficult to compare answers to related questions, for example, the importance of managers as opposed to research and development units, since the bias will introduce differences in the mean scores assigned to different strategies. Similarly, individuals who are asked to rank their success relative to others are known to have optimistic views of their own success. It is, therefore, not unlikely that the same situation occurs with the managers who are responding to questions about the success of their own firms relative to their competitors. To complicate matters, the respondent bias

may also differ across questions. For example, managers may assess their firm's advantage as being higher in areas of management.

Business surveys are repeatedly used to infer where the emphasis on strategies and activities should be placed in order to generate success. Presenting only the replies of the average respondent does not serve this objective well. One of the methods that can be used to overcome this deficiency is to divide the respondents based on their actual success and to tabulate the survey's answers for the more- and less-successful firms. In this case, comparison of activities or attitudes between the more- and the less-successful firms can be used to infer directly the differences in strategies that are associated with success.

To accomplish this, the sample from this survey was divided into two groups: the more- and the less-successful firms. It uses several objective criteria, rather than self-evaluations, to measure success[17] and then tabulates the answers to the questionnaire for the two groups. Data on sales and profitability are taken from administrative data and linked to the survey to provide information that is used to measure performance.

In what follows, the results of the firms' appreciation of their own strengths and activities are given in section 3. Then, the differences between the answers given by the more-successful and the less-successful groups are presented in section 4.

2.4 Frame Design and Survey Response

The sample for the growth survey was designed to give a picture of growing Canadian small- and medium-sized firms (GSMEs) in 1992. Growing firms were chosen for the survey in order to ensure the exclusion of declining firms. Eligible firms for this study were selected from a longitudinal file linking firms in 1984 and 1988. Small- and medium-sized firms were defined as having fewer than 500 employees[18] and less than 100 million dollars of assets in 1984. Eligible firms also had to have grown in employment, sales, and assets between 1984 and 1988. A four-year time period was chosen to delineate a group of firms that enjoyed more than transitory success, to define a group that experienced long-run success. Success over the four-year period (1984-1988) was closely correlated with success over the longer period (1978-1988).[19]

Growth is used as the criterion for choosing the sample because it serves to eliminate those firms that were in decline. This is not to say that growth is the only or even the most desirable attribute of a firm. The success of a firm can also be measured by its profitability, by its productivity, by the wages it pays to its employees, by its market share, or by its export orientation. Since successful firms tend to grow and unsuccessful firms tend to stagnate, the growth criterion is used to draw a sample of firms that are generally successful.

Some 2,157 eligible firms were randomly selected from the population of eligible firms. The survey sample was stratified proportionally to the population of eligible firms in five major economic regions and ten industries. Chartered banks, all public institutions in educational services, and provincially funded hospitals were excluded from the survey.

The survey was conducted by mail with telephone follow-up. A response rate of 68.6% produced 1480 valid responses from the 2,157 firms surveyed.[20] The average sales of a responding firm were some $6.6 million as of 1989, average assets were $4.7 million, and average employment was 44 people. Absolute numbers and response rates varied among economic regions and industries (see Appendix

II, Table 2.1). The highest regional response rate was 74.8% in the Prairies, and the lowest rate was for B.C. firms at 62.7%.

3. Survey Results

3.1 General Characteristic Profile

Small firms are generally pictured as independent entities—firms that are owned by the managers who run them and that have few formal ownership ties with other companies. Indeed, independence is used both in the U.S. Small Business Act and by the Bolton Report in England as one of the characteristics that defines small business.[21]

Independence has both advantages and disadvantages. On the one hand, owner-operated firms have few of the problems that are associated with the separation of ownership and control that exists in large firms. This gives these firms the advantage of a simple management structure, a personalized style, the ability of quick response, and adaptability. On the other hand, lack of ties with other companies may reduce access to financing or to new technologies and innovations.

The survey focused on three dimensions of independence: the extent to which the firm is owner-operated, the importance of ownership ties to other firms, and whether ownership ties are to Canadian or foreign firms. These questions on governance investigate whether ownership and management are separated and provide a measure of the nature of control if the GSME is not directly managed by owner-operators.

Some 86% of the sample firms are independent, while 14% are affiliated with a parent firm (see Figure 2). Some 72% are independent GSMEs that are owned and operated by executive/managers; only 14% are independent and owned by passive investors.[22] The majority of the affiliated companies in our responding sample are Canadian owned. Foreign subsidiaries are not prevalent in the Canadian

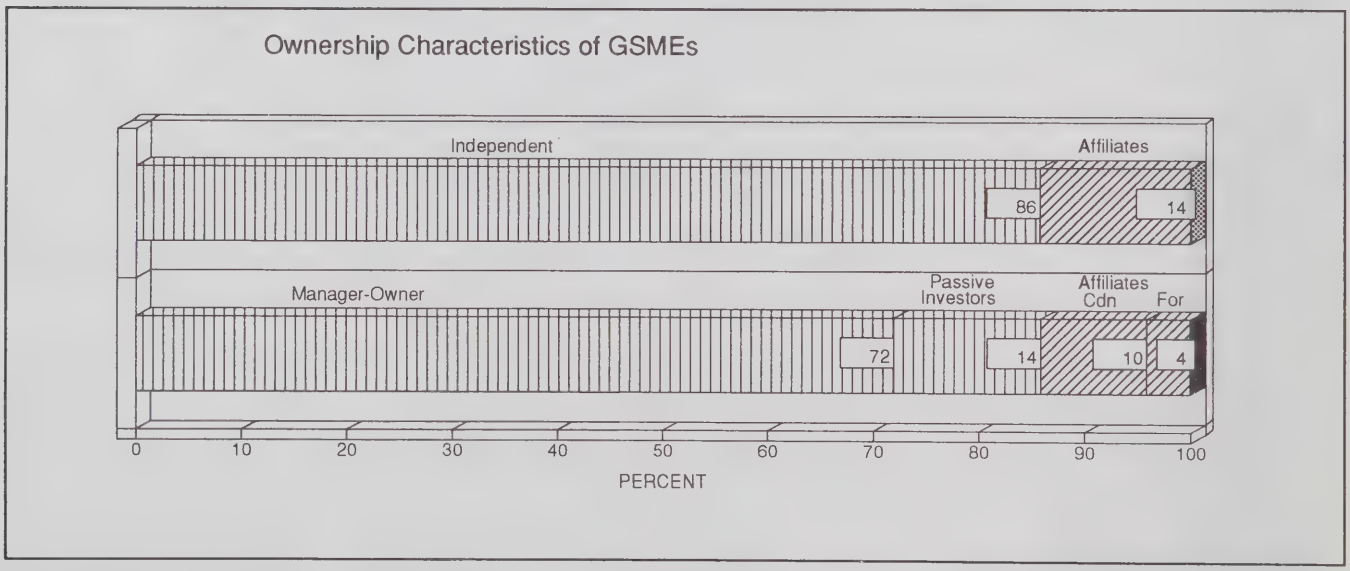


Figure 2. Ownership Characteristics

GSME population. Together, independent firms and Canadian affiliates account for 96% of the sample.

The survey investigated the extent to which growth arose from internal or external expansion. The constraints on organizational and capital structure in smaller firms and the possibilities for internal expansion make the external expansion route via merger less attractive than expansion by internal investment. Evidence confirms that merger activity is concentrated in larger firms (Baldwin and Gorecki, 1990). The alternative to mergers is an extension via alliances—especially in areas that are fertile ground for joint innovation.

The survey found that only a small portion of GSMEs were involved in either or both merger activity and strategic alliances during the 1989-91 period—7.4% in mergers and 7.6% in strategic alliances. Whatever gave rise to the growth of the sampled firms, it was generally not a tendency to acquire other firms. The success of this group must be sought elsewhere.

It is noteworthy that the less structured route of alliances was used almost as frequently as mergers. Joint ventures are a means by which firms can link their interests without full integration via a merger. The data here corroborate how important this vehicle has become.

3.2 Perceived Growth Factors for GSMEs

Understanding the activities of GSMEs requires more than just measures of the activities of firms in areas such as human resources, innovative strategy, and financing. In order to make these measures meaningful, it is essential to have an estimate of the importance that GSMEs attach to these activities. To develop this information, GSMEs were asked to evaluate the contribution that different factors make to their growth.

The factors were:

- management skills,
- marketing ability,
- skilled labour,
- access to markets,
- access to capital,
- cost of capital,
- ability to adopt technology,
- R&D-innovation capability,
- government assistance.

Scores were based on a scale of 0 to 5: 0 (not applicable), 1 (not important), 2 (slightly important), 3 (important), 4 (very important), and 5 (crucial).

Figure 3 provides the average score of growing firms for each of these factors for the period 1989-91.[23] The mean response to all questions on growth factors is 2.5. This is the mid-point of the six response codes—0 to 5.

Management skill is given the highest average score—a mean value of 3.34 with a standard error of 0.04. Skilled labour and marketing ability have mean scores (standard errors) of 2.93 (0.047) and 2.87

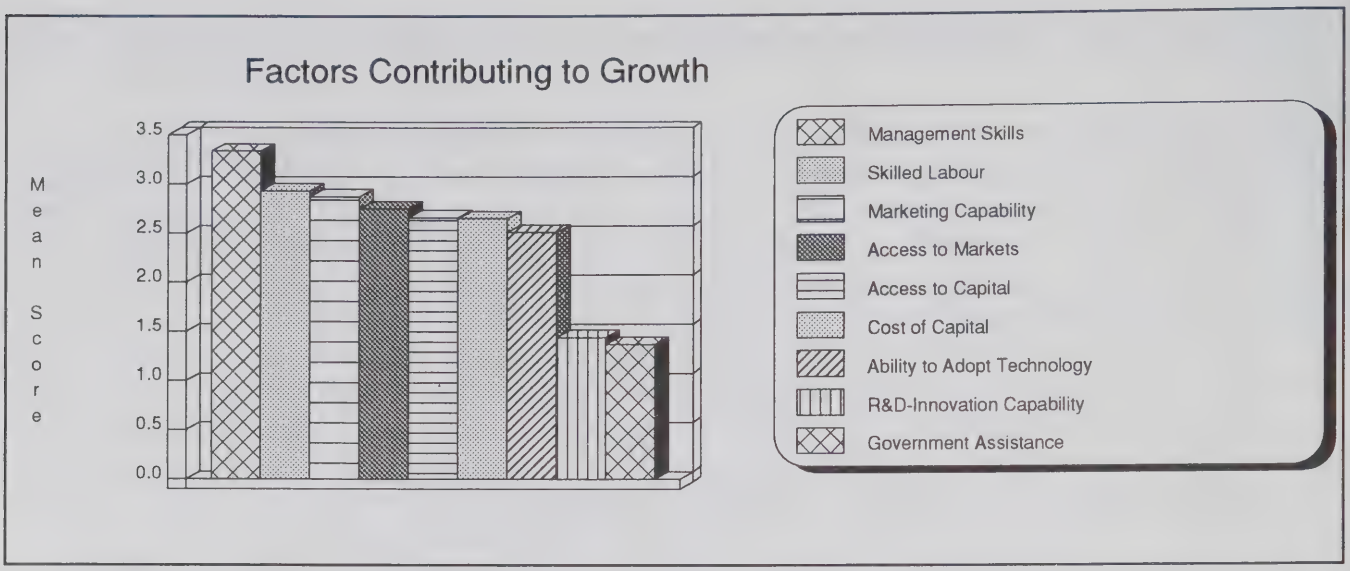


Figure 3. Factors Contributing to Growth: Mean Score

(0.05), respectively. Access to capital and the cost of capital have mean scores of 2.66 (0.049) and 2.65 (0.051), respectively[24]. It is noteworthy that the mean score on the ability to adopt technology at 2.51 (0.051) ranks well ahead of R&D-innovation capability at 1.44 (0.05). Government assistance ranks at the bottom along with R&D-innovation capability with a score of 1.37 (0.049).

Figure 4 graphs the percentage of the sample that score the activity as 4 (very important) or 5 (crucial), as well as the sum of the two. Approximately 55% of the sample rank management in these categories as 4 (very important) or 5 (crucial); some 43% place marketing and skill development there; between 33% and 35% place capital cost, capital access, and ability to adopt technology in this group; research and development and government assistance follow far behind with 16% and 14%, respectively.

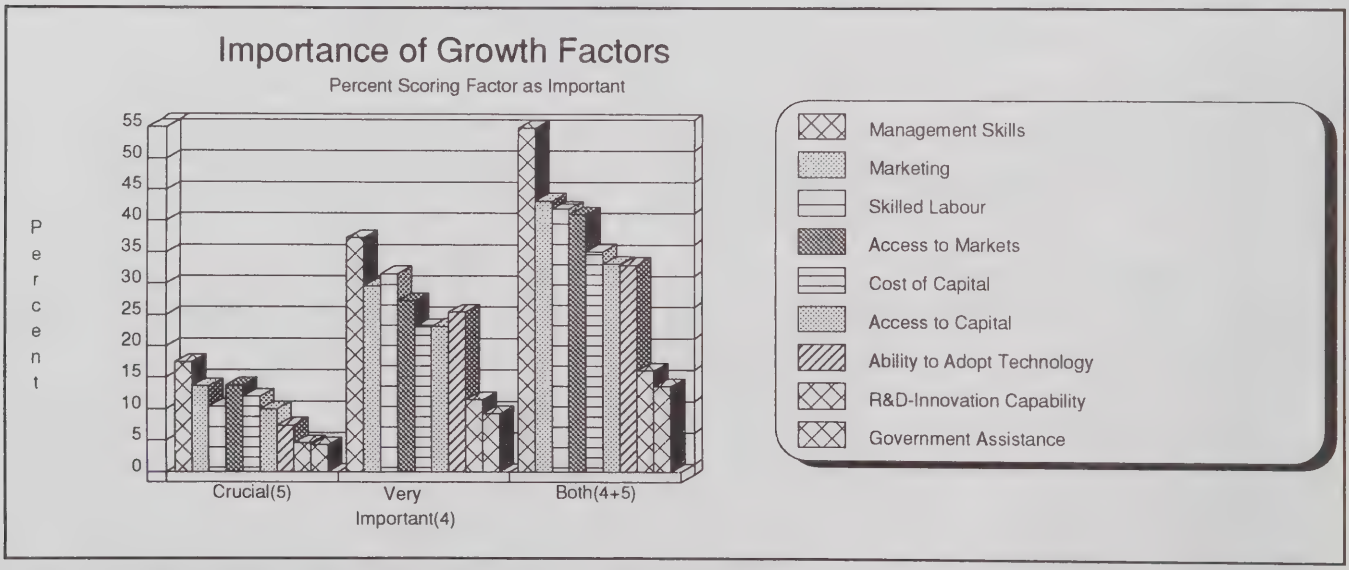


Figure 4. Ranking of the Most Important Growth Factors

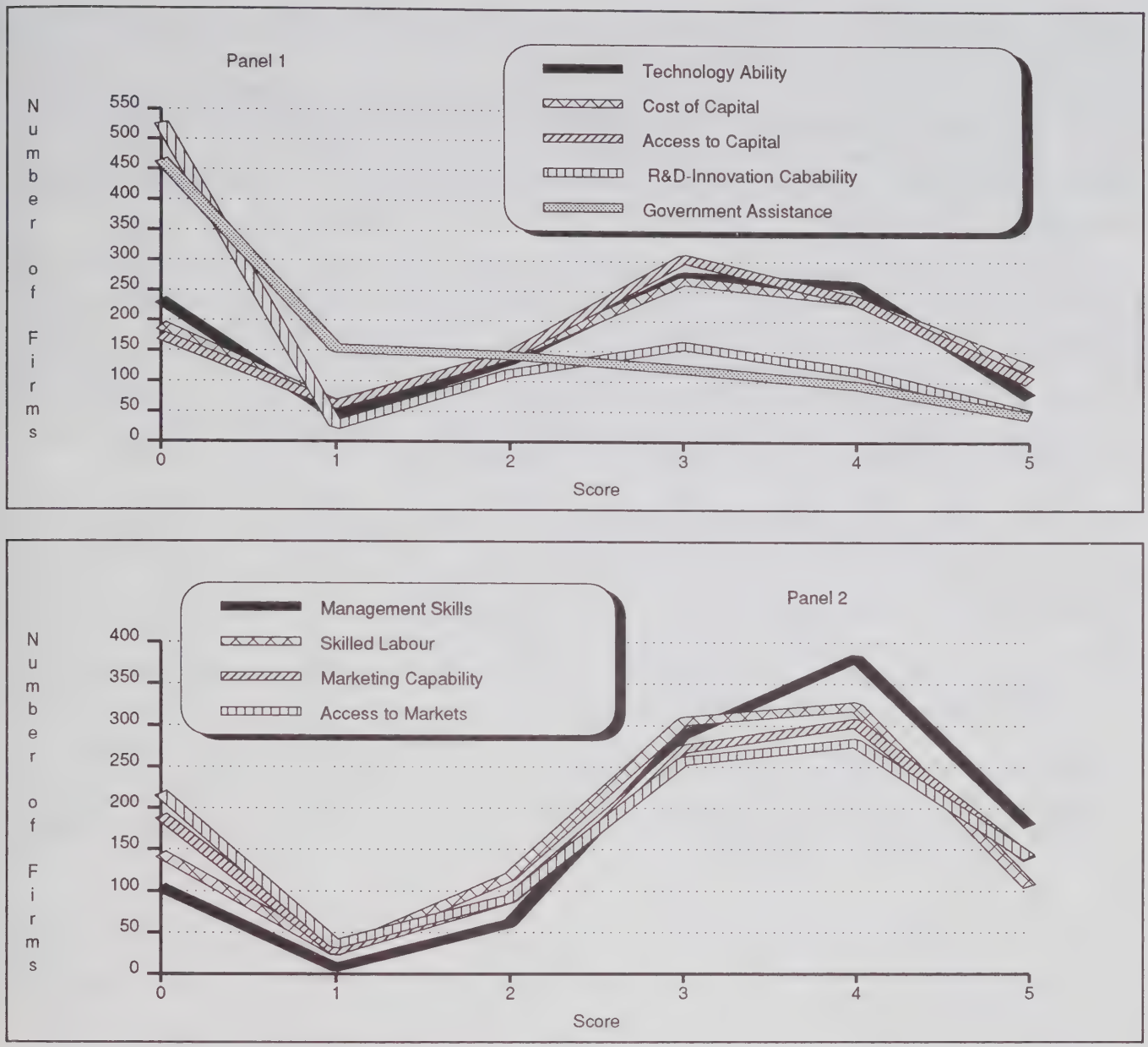


Figure 5. Distribution of Growth-Factor Scores

GSMEs, therefore, place very high values on management capabilities. Labour skills and marketing come next. Financing activities follow only slightly behind in a separate group with GSMEs attributing about the same importance to the cost of capital and access to capital. It is occasionally claimed that access to capital is a greater problem than the actual cost of capital. Since they place the same importance on both, GSMEs do not agree. The ability to adopt technology is ranked on a par with financing factors. It is seen to be considerably more important than an R&D-innovation capability. Finally, small firms exhibit self-reliance and feel government assistance is the least important factor contributing to growth.

A more detailed picture of the distribution of the responses is presented in Figure 5, panels 1 and 2, for each of the categories. Capital costs, access to capital, and technology (Panel 1) have the largest number of GSME responses at the value of 3 (important). Research and development has a large

number of zero responses, but the distribution is quite symmetric for firms that place a positive value on this factor. Its low overall ranking stems from the large number of firms that classify an R&D-innovation capability as 0 (not applicable). On the other hand, while government assistance is also scored as 0 (not applicable) by a large number of respondents, its distribution is skewed downwards with the largest number of responses at 1 (not important). Management, marketing, access to markets, and employee skills (Panel 2) are skewed upwards with the largest number of responses occurring at the value of 4 (very important).

These findings are supportive of the view that internal factors such as managerial skills and entrepreneurial values are the most important factors that GSMEs use to explain their success.[25] But they suggest that substantial attention is being paid to other areas that are usually targeted as providing particular difficulties to smaller businesses. A survey by the Canadian Federation of Independent Business in 1984 revealed that GSMEs experience difficulty in finding, training, and keeping the employees they need.[26] The answers here suggest that GSMEs attribute their success almost as much to the skill levels that they have developed as to their marketing and management successes.

The GSME survey also requested that respondents rank the importance of the same factors for the future. The importance given to all factors is higher for the future than their past. On average, the increase across all categories is 0.33. Increased competition and uncertainty in the future will require greater attention to all factors affecting efficiency and growth. What is perhaps more important is that differences in the increase across categories are not statistically significant. GSMEs felt that each of the categories would become more important in the future, but were unable to pick out one factor that would increase in importance much more than the rest.

Industry Differences. Industries differ substantially in terms of characteristics such as labour skills, the capital intensity of the production process, and the degree to which advanced technology is being introduced into the production process. As a result, smaller businesses might be expected to place a different relative emphasis on activities across industries.

To investigate this possibility, a comparative analysis was made of the importance of the perceived growth factors for manufacturing, construction, wholesale trade, retail trade and business services. The results are included in Table 1, with the categories being ranked in order of the importance given to them in the national sample.

The most striking observation is the similarity in the relative scoring of the different factors. In all five industries, management skills rank first. Government assistance is generally last. Elsewhere, the ranking of the various categories is basically the same. An exception occurs for the category "skilled labour", which is not quite as important in the wholesale sector and is relatively more important in the construction sector than in the all-industry rankings.

Thus, the picture of the growth factors that affect GSMEs as a whole is broadly typical of that found in different industries. The environment of industries differs markedly in many respects—capital structure, market structure, the efficacy of different marketing strategies, the possibility of exploiting science-based advances, and opportunities for patenting. Despite these differences, most firms are faced with a common set of problems. That the cross-industry differences are relatively minor suggests there is a common imperative that determines a similar ranking for the strategies being followed.

Table 1
Average Score by Industry for Factors Affecting Growth

Growth Factor	Industry Sector				
	Manufacturing	Construction	Wholesale Trade	Retail Trade	Business Services
Management Skills	3.25	3.37	3.10	3.51	3.49
Marketing Capability	2.95	2.09	3.08	2.92	3.06
Access to Markets	2.95	2.47	3.06	2.43	2.71
Skilled Labour	2.94	3.29	2.54	2.98	3.12
Cost of Capital	2.83	2.77	2.60	2.57	2.29
Access to Capital	2.80	2.76	2.53	2.55	2.48
Technology Adoption	2.76	2.53	2.34	2.15	2.90
R&D Capability	2.03	1.05	1.28	0.77	1.70
Government Assistance	1.83	0.94	1.15	1.20	1.24

3.3 Competitiveness Assessment

In order to corroborate and extend the picture of the firm that is provided by the self-assessment of growth strategies, GSMEs were asked to evaluate their position in relation to their main competitors for ten attributes. These are:

- customer service,
- flexibility in responding to customers' needs,
- quality of products,
- employee skills,
- range of products,
- frequency of introduction of new products,
- price of products,
- costs of production,
- labour climate,
- spending on R&D.

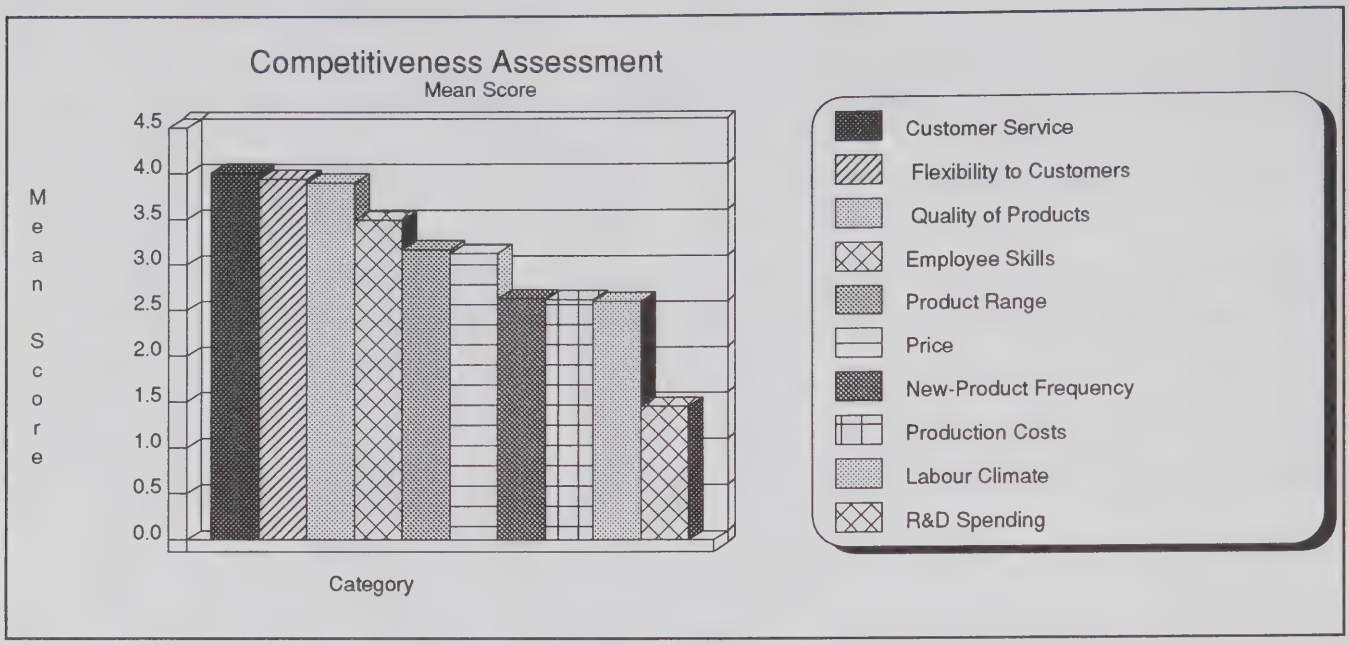


Figure 6. Competitiveness Assessment: Mean Scores

A six-point scale was used for scoring each firm's relative position: 0 (not applicable), 1 (much worse than the competition), 2 (somewhat worse), 3 (about the same), 4 (somewhat better), and 5 (much better).[27]

The attributes chosen for the competitiveness assessment are closely related to the growth factors that were also evaluated. The question on growth factors permits an assessment of the importance of certain activities to the firm; the competitiveness-assessment question provides the opportunity to see whether these activities are pursued so intensively as to give the GSME population an advantage over their competitors in these areas.

The mean response for those firms that evaluated at least one attribute (the comprehensive mean)[28] is presented in Figure 6. The mid-point of the six-point scale used to calculate the comprehensive mean is 2.5. The mean response for all categories in the question is 3 (about the same).

Growing firms feel very much superior to their main competitors in three areas. These are customer service, flexibility in responding to customer needs, and quality of product, with average scores (standard errors) of 4.01 (0.034), 3.94 (0.036), and 3.90 (0.033), respectively.

The skill level of employees receives an average score of 3.49 (0.036). By way of contrast, labour climate only receives an average score of 2.60 (0.052).

In the third group is the price level and the range of products. The mean score for price advantage is 3.13 (0.032); for the range of products, it is 3.17 (0.047).

The advantage with respect to price does not translate into the same advantage for costs of production, which receives a mean score of 2.62 (0.046). Similarly, the advantage with respect to range of products is not reflected in an advantage vis-à-vis the introduction of new products with a mean score of 2.64 (0.053).

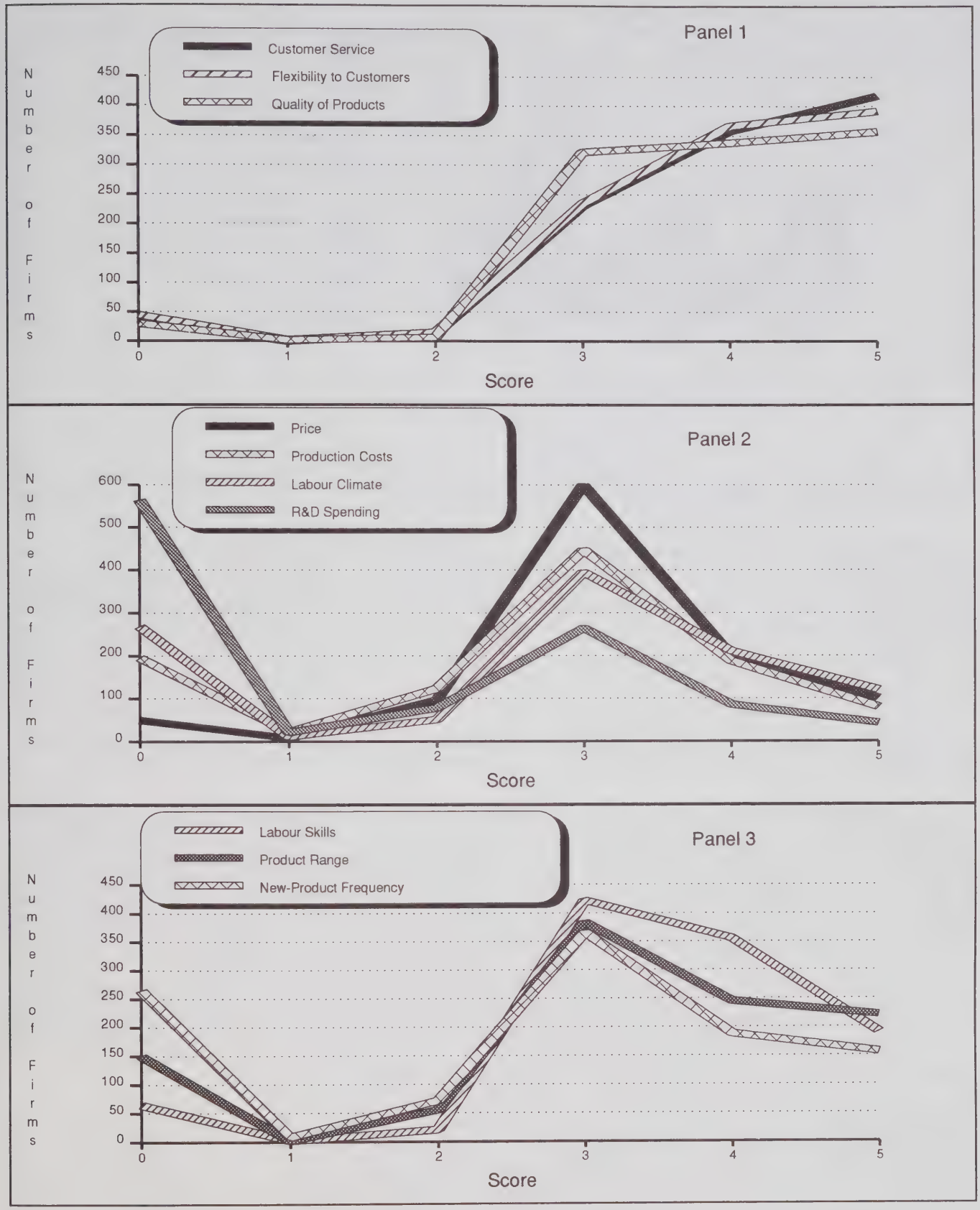


Figure 7. Distribution of Competitiveness Scores

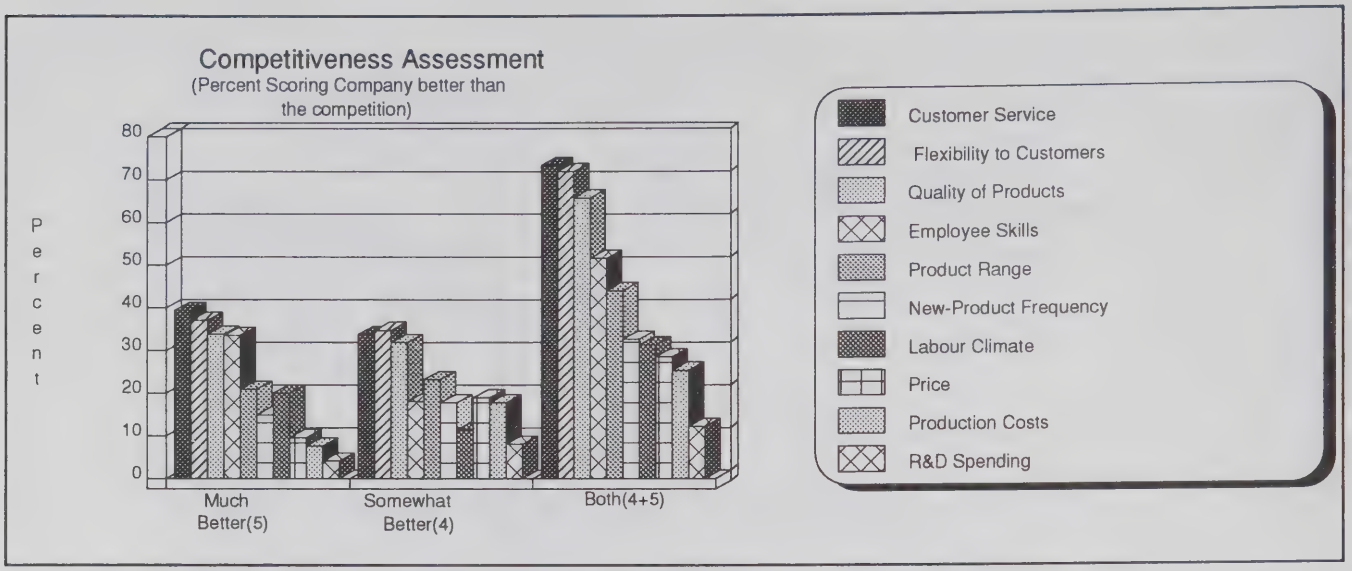


Figure 8. The Most Important Competitiveness Attributes

The average score of 1.45 (0.051) attributed to R&D places it last. This accords with the low valuation assigned to R&D as a factor contributing to growth.[29]

The distributions of the responses for the competitiveness scores are presented in Figure 7. The distributions for customer service, flexibility, and quality (panel 1) are all skewed upwards with the mode or the greatest number of responses at 5 (much better). Employee skills, range of products, and frequency of new products (panel 3) are also skewed, but have modes at 3 (about the same).

The distributions of the scores for price and cost of production (panel 2) are centred at 3 (about the same). However, cost of production has a greater variance and many more missing values. Price is not an area where a firm can hope to establish much difference from their competitors. Instead non-price competition prevails as the answers on quality, customer service, and flexibility indicate.

The importance of labour climate (panel 2) is centred on 3. Unlike employee skills, there are a large number of observations for labour climate that are assigned a 0 (not applicable). These are probably cases where the firm is so small and owner- or family-operated that labour climate is not an issue. When the non-applicable answers are removed, the means of the two labour questions—employee skills and labour climate—move closer to one another, with skill still being ranked slightly higher than labour climate (see Appendix III, Table 3.2), and the difference is still significant.

The responses for R&D are concentrated around 3 (about the same), but have a very large number of zero values where firms have responded with a 0 (not applicable). Some 50% of firms filling in one of the other responses felt R&D activity was not applicable; that is, they did not perform R&D.[30] Of those with such an activity, most felt that they were equal to their competitors.

An alternate way of evaluating the differences in the categories is to examine the number of firms that considered themselves better than their competitors. Figure 8 depicts the percentage of the sample by category that evaluate themselves as 4 (somewhat better) or 5 (much better) than their competitors. Over 70% of the comprehensive sample consider themselves to be doing better than their competitors on service and flexibility. The other attributes in descending order of importance are quality of products, employee skills, range of products, frequency of new-product introduction,

Table 2
Average Score by Industry of Competitiveness Attributes

Attribute	Industry				
	Manufacturing	Construction	Wholesale Trade	Retail Trade	Business Services
Customer Service	4.03	4.04	4.15	4.26	3.93
Flexibility	4.06	3.93	3.91	3.97	3.93
Quality	4.08	3.69	3.95	3.77	4.02
Skills Level	3.40	3.56	3.59	3.58	3.64
Range of Products	3.41	2.63	3.57	3.59	2.95
Price	3.16	2.99	3.09	3.35	3.13
Frequency	2.75	2.05	3.02	3.06	2.33
Cost of Production	2.98	2.76	2.17	2.15	2.60
Labour Climate	2.78	2.85	2.50	2.47	2.44
R&D Spending	1.97	0.94	1.34	0.75	1.83

labour climate, price, costs, and R&D. Only 12% look to their R&D ability to give them a competitive edge.

The success of GSMEs, in their view, rests largely on their ability to target well defined markets. Customer service, product quality, and flexibility are more important than product price. Employee skills are ranked just after customer service. Some 50% of the respondents to the competitiveness-attribute question ranked the skill of their employees as 4 (somewhat better) or 5 (much better) than their competitors. This indicates the importance attributed to the quality of the labour force. While R&D ability is not considered to be an important factor contributing to growth, GSMEs do emphasize range of products and the frequent introduction of new products. In particular, just over 33% emphasize that the frequency of introduction of new products is 4 (somewhat better) or 5 (much better) than their competitors.

The mean scores by industry are given in Table 2 for the ten attributes of competitiveness. While the ten attributes show some variation among industries, the similarities in the ordering of the attributes are striking. One noteworthy difference occurs in the construction sector, which ranks the introduction of new products lower than do the others. The national ranking of the various competitive strengths then applies generally across different sectors.

3.4 The Activities of GSMEs

The evaluation of growth factors and relative competitiveness provides only a general outline of the directions being followed. It leaves a number of questions about the actual activities of GSMEs unanswered. If marketing is seen by GSMEs as a key to success, what on average is spent in this area? How does it compare to spending aimed at upgrading employee skills? How many firms possess R&D units and what is spent on R&D-based innovation?

In order to answer questions such as these, the self-assessment of the importance of the different growth factors needs to be benchmarked against data on GSMEs' activities in five major areas. These are marketing, human resources, financing, innovativeness, and exporting.

3.4.1 Marketing Capability

After management and skilled labour, GSMEs regard marketing as the most important factor leading to success. Their marketing efforts contribute to a performance that is superior to their competitors in areas of quality, customer service, and flexibility to customer needs.

The importance of marketing activities can be assessed by comparing expenditures in this area to those made for training and innovation. To do so, GSMEs were asked to enumerate their investments in marketing, training, research and development, and in machinery and buildings. While the first three categories are not normally included in the investment statistics collected by most statistical agencies, they are nevertheless true investments; that is, they are expenditures made today with a future payoff attached.

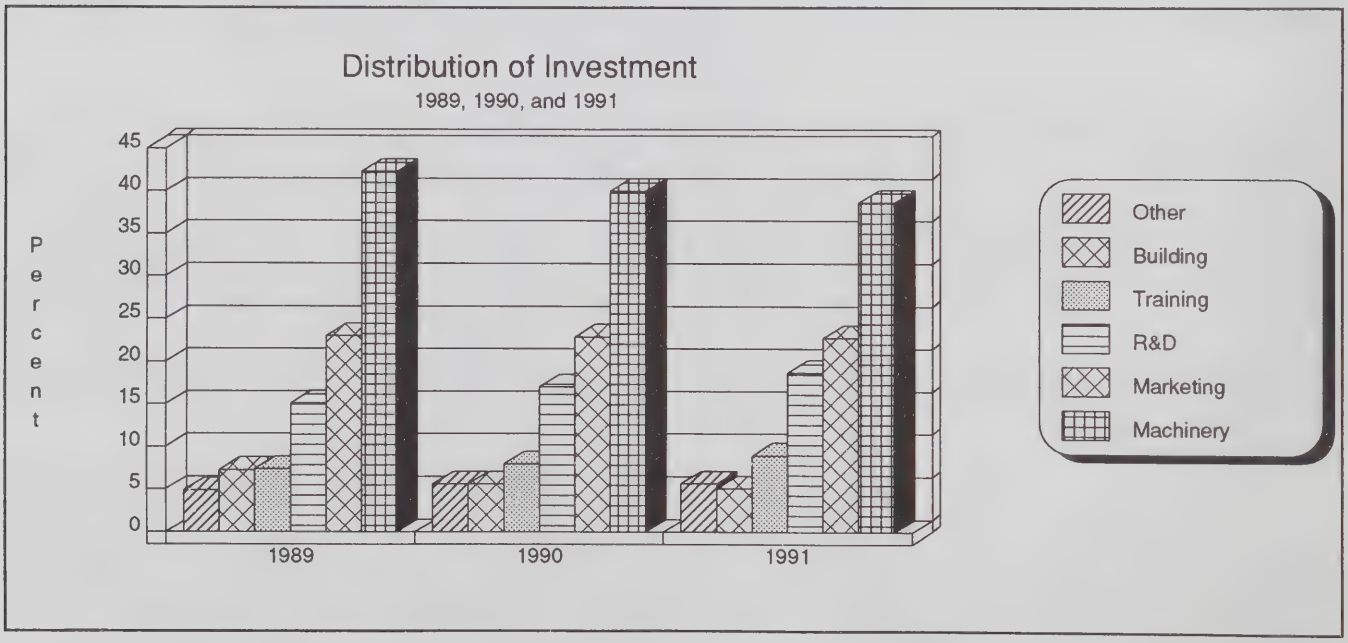


Figure 9. Distribution of Investment: 1989-91

Figure 9 depicts the average share of investment expenditure accounted for by each category for the years 1989, 1990, and 1991. The unweighted mean of the investment in market development as a share of total investment expenditures is about 23% for the 1989-91 period. While this is considerably less than the machinery category, it is nevertheless substantial. It is a larger investment than in either training or R&D and confirms the relative importance given to marketing by GSMEs.

3.4.2 Human-Resources Capability

Human-resources strategies in GSMEs are given about equal importance to marketing strategies. The human-resources capability of firms is determined by the employee skills, knowledge, and flexibility of their personnel.

While small firms are sometimes criticised for a lack of interest in the training of their staff, their evaluation of the importance of a skilled labour force would suggest that this characterization is incorrect.

Data on the human-resources capability of GSMEs serve to corroborate the self-assessed importance of skilled labour. Measures of occupational structure of the firm, the percentage of investment in training and upgrading of employee skills, and the number of employees sent on training all serve to describe the activities of GSMEs in this area.

Table 3
Employment Composition by Occupational Category (Percent)[1]

Firm Size Class	1-19		20-99		100-500		All Firms less than 500	
Occupational Category	GSMEs	All Firms	GSMEs	All Firms	GSMEs	All Firms	GSMEs	All Firms
Executive Management	22.7	9.9	9.7	13.8	5.6	16.0	9.0	13.2
Professionals	7.9	3.8	5.5	5.0	5.7	6.5	6.1	6.0
Sales	12.9	13.4	12.9	8.9	12.0	10.6	12.2	11.1
Technical/ Production	20.2	31.0	29.7	38.4	27.2	39.0	28.1	35.3
Other	36.0	42.0	42.1	33.9	49.5	28.0	44.6	34.4

[1] All percentages are employment-weighted means.

a) Employment Composition by Occupational Groups

The distribution of employment is presented in Table 3 for five occupational categories: executive/management, professionals, sales, technical/production, and other. On average, some 28% of employees are technicians, 12% are sales personnel, 9% are executives, and 6% are professionals.

The distribution of employment in small firms in general, using the 1990 Labour Market Activities Survey, is also reported in Table 3. For this purpose, all jobs reported in this survey for 1990 are classified into the five categories reported above. Taking into account the accuracy with which assignments can be made to these classifications, the occupational distribution of these firms is about the same as that observed in the overall Canadian-firm population.[31] GSMEs have a smaller percentage of executives/managers, employ a slightly higher proportion in sales capacities, and staff a smaller fraction in the technical/production category. The percentage of total employment in the professional category is almost the same as for the entire population. Comparisons by size class also show substantial similarities.

b) Extent of Training Programs

The second aspect of the human-resource strategy to be examined is the extent to which GSMEs provide training for their employees. The GSME survey differs from some others in that it investigates both formal and informal training. Formal training is that which takes place in a structured environment; informal training is generally unstructured, on-the-job training. In the past, criticisms have been made of training surveys aimed at small firms that have focused only on formal training systems and that have omitted the informal. Offsetting this criticism is the fact that responses to questions about the intensity of informal training are less likely to be derived from standard accounts because of the unstructured nature of informal training.

Table 4
GSME Training Incidence By Size Class (Percent) [1]

Size Class (Number of Employees)	Proportion of Firms Performing Training		
	Any Type of Training	Formal Training	Informal Training
1-49	46	31	32
50-99	65	46	46
100-199	73	64	44
200-500	78	65	48
All	52	36	34

[1] Percentages are calculated as employment-weighted means.

Table 5
GSME Training Intensity By Size Class
Proportion of Employees Being Trained in GSMEs Performing Training (Percent)[1]

Size Class (Number of Employees)	Formal Training	Informal Training
1-49	36	43
50-99	26	41
100-199	31	49
200-500	15	41
All	32	43

[1] Percentages are calculated as employment-weighted means.

Table 6
GSME Training Intensity By Size Class
Proportion of Employees Being Trained in All GSMEs (Percent)[1]

Size Class (Number of Employees)	Formal Training	Informal Training
1-49	13	15
50-99	12	18
100-199	20	21
200-500	11	22
All	14	19

[1] Percentages are calculated as employment-weighted means.

Table 7
Formal Training By Occupational Group (Percent) [1]

Occupational Group	Size Class (Number of Employees)			
	1-49	50-99	100-499	All
Executive/ Management	18.4	24.4	23.6	21.2
Professionals	26.0	20.2	21.0	22.5
Sales	17.6	16.0	19.4	18.0
Technical/Production	20.6	12.6	16.1	16.4
Other	13.1	9.8	12.1	11.8

[1] Percentages are calculated as employment-weighted means.

Table 8
Informal Training By Occupational Group (Percent)[1]

Occupational Group	Size Class (Number of Employees)			
	1-49	50-99	100-499	All
Executive/ Management	14.3	16.4	14.6	14.8
Professionals	20.7	18.7	9.4	15.0
Sales	30.8	35.5	22.6	27.9
Technical/Production	24.9	13.1	24.5	24.0
Other	19.8	21.5	31.6	26.3

[1] Percentages are calculated as employment-weighted means.

Tables 4, 5, and 6 contain several different measures of the incidence of training for four employment size classes. The percentage of GSMEs offering training is given in Table 4; the percentage of employees in these firms that receive training is included in Table 5; and the proportion of all employees in a size class receiving training is provided in Table 6.

About 52% of GSMEs report that their employees receive some training—either formal or informal.[32] On average, 36% of all firms offer employees a formal training program and 34% of these firms offer an informal training program (Table 4). In those firms offering training programs, some 32% of workers receive formal training, while 43% receive informal training (see Table 5). When looking at the whole GSME population (including those firms not offering training), some 19% receive informal training, 14% receive formal training (see Table 6).

The proportion of firms performing any training (Table 4) increases from 46% in firms of less than 50 employees to some 78% in firms with 200 to 500 employees. The incidence of formal training increases from 31% in the smallest to 65% in the largest. Informal training also increases—from 32% to 48%. In contrast, there is no apparent trend in the percentage of workers offered informal training by training firms across size classes (see Table 5). However, the larger GSMEs give a smaller percentage of their workers formal training than do smaller GSMEs. The net result of the effects outlined in Tables 4 and 5 for all workers (those in training and non-training firms) is presented in Table 6. The proportion receiving formal training increases across the first three size classes and then decreases in the largest size class; the proportion of all workers receiving informal training is higher in the two largest than in the two smallest size classes.

These data complement the importance that GSMEs said they place on human-resource training and their self-assessed advantage over their main competitors. The training efforts of GSMEs also compare broadly to the efforts of small firms derived from the Human Resource Training and Development Survey (Statistics Canada, 1987), which restricted itself to formal training. It reported that only 31% of firms with fewer than 500 employees provided training.[33] In the GSME survey, about 36% of firms provide formal training.

A breakdown of training incidence by occupational class is presented in Tables 7 and 8. Professionals and managers are most likely to receive formal training and larger firms are more likely to train managers. The emphasis on training and management then is complementary in that the managerial group receive the greatest incidence of formal training. Technical and production personnel are about as likely to receive formal training as sales personnel. Sales and technical production categories have the highest rate of informal training, management the lowest.

c) Training Expenditures

Two questions were posed about the magnitude of expenditures on training. The first asked for total expenditures on both formal and informal staff training—for training expenses as a percentage of total payroll. The second asked GSMEs to consider their expenditures on training as an investment and to report the percentage of total investment that was devoted to staff training.

Total training expenditures are reported in Table 9. On average, training GSMEs spent $30,310 per firm or $3,040 per employee trained.

Table 9
GSME Training Expenditure by Size Class

Size Class (Number of Employees)	$ Per Firm	$ Per Employee Trained[1]	$ Per Employee In Training Firm[1]	$ Per Employee for All Firms[1]	Percent of Sales[2]
1-49	14,940	1,360	760	350	0.40
50-99	30,120	990	480	280	0.31
100-199	55,300	720	430	290	0.29
200-500	94,560	1,100	370	220	0.27
All	30,310	3,040	550	330	0.36

[1] Expenditures are employee-weighted means.

[2] Percentages are sales-weighted means.

Expenditure per firm increases across size classes, from approximately $15,000 in the smallest class to almost $95,000 in the largest class. By way of contrast, the expenditure per employee trained falls, going from $1,360 per employee in the smallest size class to $1,100 in the largest class.

Instead of using absolute expenditures, many studies have compared training expenditures to sales or to payroll. When this is done, training appears less important. For example, training expenditures amount only to 0.36% of sales. The training-to-sales ratios are inversely related to plant size, going from 0.40% of sales in the smallest to 0.27% of sales in the largest (Table 9). Training expenditures are also small relative to payroll. In terms of overall 1991 payroll expenditures, the overwhelming majority of GSMEs (73%) spent less than 1% for staff training, 18% spent between 1% and 3%, and 9% spent more than 4%.

Neither sales nor payroll provide a very appealing base or numeraire for measuring the size of training expenditures. A better metric is the total investment expenditures of a firm. A portion of the expenditures made on training is an investment in a firm's future. GSMEs were, therefore, asked to compare the training expenditures that they consider as an investment to other investment expenditures. The average share of total investment expenditures that GSMEs devote to staff training is sizable. The unweighted mean is 7.4% in 1989, 8.0% in 1990, and 9.0% in 1991. This is about half of what is spent on marketing investments and close to the amount spent on R&D.[34]

3.4.3 Financing

Small firms are often described as being constrained by limited financial resources. On the one hand, their financial structure is said to be undercapitalized and deficient because of inadequate self-financing. On the other hand, complaints are made not about capital structure, but about excessive capital costs or the lack of access to capital, which is a capital-rationing problem.[35]

D'Amboise (1991, p. 141) summarizes this debate by arguing that small firms' problems stem not so much from capital cost and capital availability as from an undue reliance on debt.

The GSME survey chose not to focus on the issue of capital cost, but on the type of capital structure. A firm's financial risk depends upon its capital structure—the amount of short- and long-term debt; the amount of equity and its division between share capital and retained earnings. Firms with a precarious existence depend on short-term capital with all of the attendant potential risks on the occasion of renewal, or do not earn enough profits to allow retained earnings to accumulate to significant levels. In this case, they end up relying too heavily on debt payments that do not permit the type of flexibility and adaptation that is required during recessions. An examination of the balance sheet of GSMEs permits an assessment of the extent to which they are in this position.

Previous studies have noted that small firms do not generally rely on organized equity markets for funding. The predominance of internal financing and the associated lack of participation in public-equity markets is attributed to one of two factors. On the one hand, equity markets may be inaccessible (Walker and Pethy, 1978). On the other hand, the owner-manager may use internal funds so as to preserve the advantages of direct control. To investigate whether GSMEs also rely on internal funds, the survey investigated the source of financing used by GSMEs. A breakdown was sought of the percentage of funds coming from financial institutions, from suppliers, from affiliates, and from internally generated funds. Since GSMEs are the most successful group of small firms, they are the least likely to be forced out of equity markets. Therefore, heavy reliance upon internal funds lends weight to the argument that this is a matter of choice.

a) Capital Structure

The capital structure for GSMEs is presented in Figure 10. GSME liabilities and shareholders' equity are divided into short-term debt, accounts payable, long-term debt, paid-in-capital, retained earnings, and deferred taxes. The unweighted mean percentage in each category is presented. There are two noteworthy findings.

First, there is a preponderance of long-term rather than short-term capital in GSMEs. Some 54.5% of capital consist of shareholders' equity (paid-in-capital and retained earnings) as well as long-term debt. Only 38.7% of the financing is provided by short-term capital—14.9% by short-term debt and 23.8% by accounts payable. The remaining 6.8% is financed by deferred taxes and other instruments.

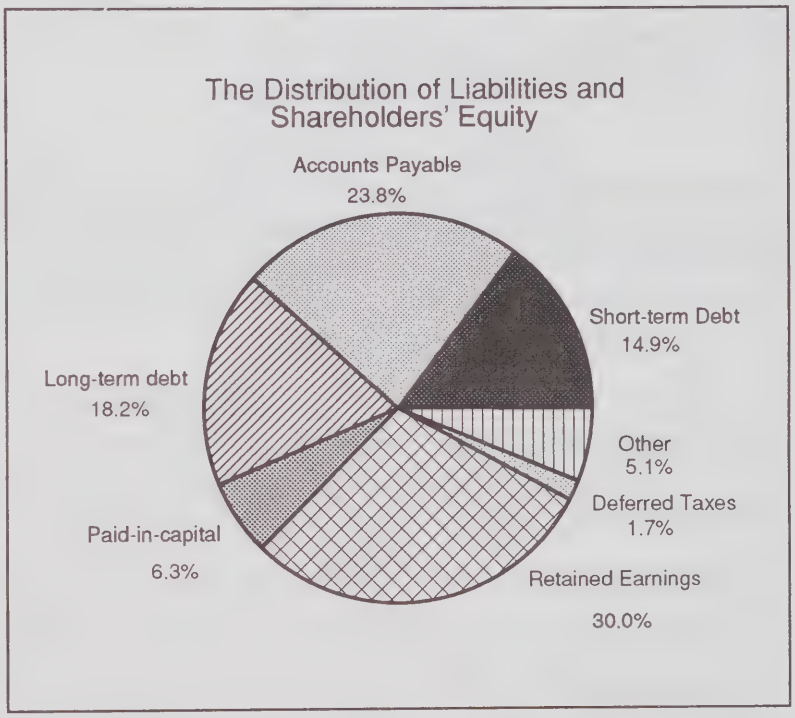


Figure 10. Distribution of Liabilities and Equity

Table 10
Distribution of Liabilities and Shareholders' Equity by Size Class (Percent)[1]

Category	Size Class ($Million Sales 1991)					
	< 1	1-5	5-10	10-25	25+	All
Short-term Debt	13.2	15.8	18.7	16.6	16.5	14.9
Accounts Payable	24.2	24.9	23.6	18.0	15.8	23.8
Long-term Debt	17.5	16.7	25.2	23.0	19.7	18.2
Retained Earnings	34.0	31.8	17.3	20.7	13.6	30.0
Paid-in-Capital	5.1	4.8	7.5	15.2	23.4	6.3
Deferred Taxes	1.5	1.6	2.1	1.8	3.2	1.7
Other	4.0	4.4	5.4	4.7	7.8	5.1

[1] Percentages are unweighted means

The emphasis on long-term capital provides stability to the GSME and reduces the risk of non-renewal and volatility in interest rates that occurs when short-term sources are used exclusively. It is a necessary condition for successful growth because it allows a long-term focus on the part of management, and at the same time, facilitates planning and a commitment to a longer-time horizon when an investment strategy is formulated.

The second finding is that GSMEs make substantial use of internally generated funds. Some 36.3% of total capital comes from equity, which includes retained earnings and paid-in-capital, compared to 18.2% from long-term debt. In turn, over 80% of equity consists of retained earnings. GSMEs have either started with considerable equity or have developed equity by reinvesting profits in the business.

The distribution of GSME liabilities and shareholders' equity by size class in Table 10 confirms the tendency of smaller firms to rely on internally generated funds. Paid-in-capital accounts for 5% of the liabilities of the smallest size class and 23% of the largest class. Retained earnings account for 34% of the smallest class and 14% of the largest. The decrease in the share of retained earnings just offsets the increase in paid-in-capital so that the sum of the two (equity capital) is about the same in the largest and smallest size class.

As firms get larger, they rely not only on more capital stock for equity, but they also rely on more short- and long-term debt rather than accounts payable. Short- and long-term debt together account for 36.2% of liabilities plus shareholders' equity in the largest class, but only 30.7% in the smallest class. This is offset by a reduction in accounts payable, from 24.2% in the smallest to 15.8% in the largest.

GSMEs then stand in marked contrast to the usual picture of a small firm, which is said to have a deficient financial structure with insufficient equity and long-term capital to finance long-term investments.[36] These data also demonstrate that growth appears to be associated with a substitution away from trade finance to long- and short-term debt and from retained earnings to paid-in-capital.

b) Distribution of Sources of Funds

The distribution of the major sources of funds is presented in Figure 11. The three major sources of capital for GSMEs are retained earnings (29.9%), suppliers (23.7%), and financial institutions (27.7%). Individuals and affiliated companies supply 5.4% and 5.2%, respectively, of the total financing. Only a meagre 0.6% of the capital is provided by public-equity markets and 0.6% comes from venture-capital firms. These findings corroborate the preference of GSMEs for internal sources of financing.[37]

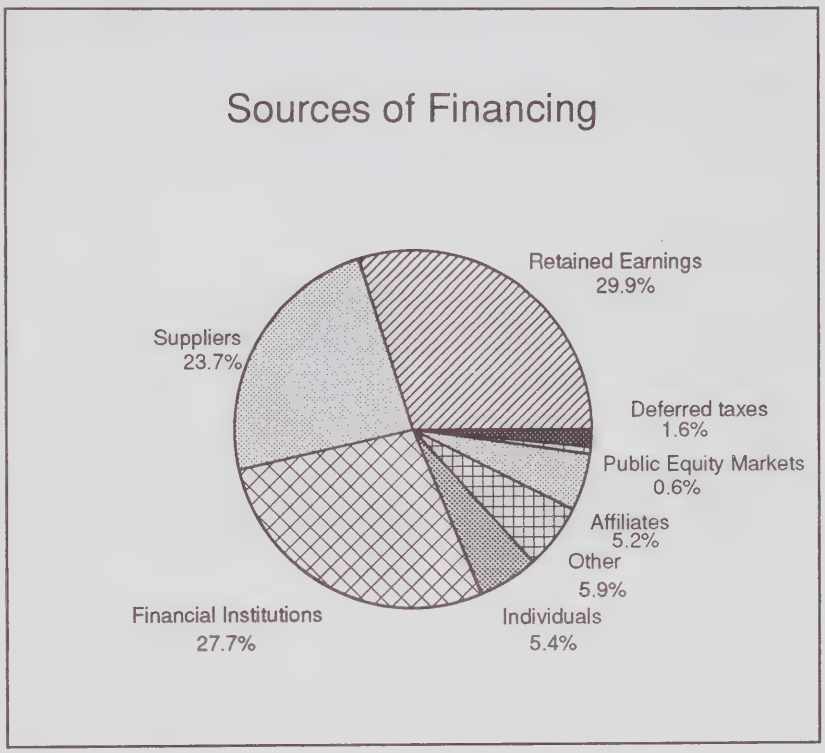


Figure 11. Sources of Financing

The distribution of the source of funds by size class (Table 11) confirms the decline in the importance of retained earnings as a source of funds as size class increases. It is noteworthy that the associated increase in other sources of funds comes not from suppliers (trade credit) and financial institutions, but from other sources. The biggest increase is in the proportion of funds coming from parents and from public equity. Together these two sources increase from about 3.6% in the smallest size class to between 16 and 20% in the two largest size classes.

Table 11
Distribution of Sources of Funds by Size Class (Percent) [1]

Category	Size Class ($Million Sales 1991)					
	< 1	1-5	5-10	10-25	25+	All
Suppliers	24.1	23.9	26.1	17.9	19.4	23.7
Financial Institutions	28.5	26.9	29.0	27.9	21.6	27.7
Profits	31.5	31.6	20.2	25.3	17.5	29.9
Individuals	6.1	4.9	4.6	2.2	7.1	5.4
Parent/ Affiliate	3.2	5.0	9.2	14.2	14.1	5.2
Other	3.5	3.5	6.2	5.6	9.6	4.1
Deferred taxes	1.1	1.7	2.3	2.6	3.8	1.6
Governments	1.3	1.2	1.2	1.4	0.5	1.2
Equity Markets	0.4	0.3	0.3	2.5	6.0	0.6
Venture Capital	0.3	0.9	0.9	0.4	0.9	0.6

[1] Percentages are unweighted means.

3.4.4 Innovative Capability

It is often said that innovative activity is the preserve of large firms.[38] By default then, small firms are seen to be less innovative. This conclusion is partly based on the observation that they account for a small percentage of all R&D expenditures.

Measuring innovation efficiency in this way can yield incorrect conclusions. For example, Freeman (1971) notes that small business in England accounted for a smaller proportion of important innovations than their share of output. Despite this, they accounted for an even smaller share of official R&D expenditures and, therefore, were relatively more efficient than large firms in producing important innovations.

Acs and Audretsch (1990) carefully examine evidence on the innovative activity of large versus small firms. Small firms are defined as those with less than 500 employees. Using a measure of the number of innovations per employee, they find the small-firm innovation rate is higher than the large-firm rate.[39]

Despite the desire to measure the output and not the input of the innovation process, statistics on the latter, in particular on research and development, are readily available. The output of the innovation process is more difficult to measure. Therefore, this study, like others, examines inputs to the innovation process. Unlike other studies, it does not rely exclusively on these measures. It uses information on the importance of innovation and the source of ideas for innovation to provide additional measures of the importance of innovation in the GSME population.

a) Research and Development

R&D expenditures provide the focus of many investigations for several reasons. First, knowledge is perhaps the most important input into the production of innovations, and investment in R&D is presumed to produce new economically useful knowledge (Mansfield, 1981; Jaffee, 1986). Second, R&D is relatively easy to measure compared to other inputs to the innovative process.

Several dimensions of the R&D process were surveyed: the percentage of total investment devoted to R&D, the percentage of small firms that have an R&D unit, the number of employees therein, and the origin of innovation in a firm.

The incidence of firms undertaking R&D. The first measure of the importance of R&D is the number of companies with R&D capability. In the GSME sample, 9.3% report employment in an R&D unit. Some 8% of Canadian subsidiaries have a R&D unit; the same percentage of United States and foreign-owned subsidiaries have such a unit.

A second measure of the importance of R&D is provided by the percentage of firms that report investment in R&D for product or for process innovations. Investments can be made for innovation without an internal R&D unit when outside specialists, joint ventures, or strategic alliances are used. Some 10.4% of the sample invest in product innovations and 5.4% invest in process innovations. Together, almost 12% invest in one or the other. There are about twice as many firms doing research and development work for new products as for new processes. Survey data for the entire Canadian population of firms indicate that about three times the number of firms engage in product innovation

as opposed to process innovation.[40] Thus, there are *relatively* more GSMEs devoting their activity to new processes than there are in the overall population.

Small firms that are subsidiaries of other firms are more likely to engage in R&D activity than independent firms. About 15% of Canadian subsidiaries that report investment expenditures indicate that some funds are expended on R&D, while 21% of United States and foreign subsidiaries do the same. Thus foreign firms are at least the equal of domestic subsidiaries in the GSME population both with respect to the percentage that possess an R&D unit and the percentage of investment that is devoted to R&D.

The number of companies performing R&D is higher for the group that has been involved in mergers or alliances. Of those engaged in mergers, some 10% report an R&D unit and 16% report R&D-investment expenditure. These percentages are even higher for those participating in a joint venture or strategic alliance—some 15% and 21%, respectively.

A third measure of the importance of R&D is the percentage of firms indicating that an R&D-innovation capability had an important role in explaining their growth. Some 30% of GSMEs indicate that an R&D capability was 2 (slightly important), 3 (important), 4 (very important), or 5 (crucial) in explaining growth. This proportion is considerably larger than either the percentage of firms with employment in a separate R&D unit or the percentage reporting R&D-investment expenditure. This may be because an innovation strategy was carried out in the past, but R&D expenditures were not being made at the time of the survey. Or it may be that firms were willing to evaluate the importance of an R&D strategy, but were unwilling to provide employment and investment information.

Employment in R&D. A second measure that captures the intensity of R&D activity is the number of persons engaged in R&D.

Generally, employment in R&D is relatively small compared to total employment in Canada. For example, in those industries reporting R&D in 1989, the number of persons employed was 11.6 million, of which some 52,000 were engaged in R&D. This is less than one-half of one percent of the total. In the manufacturing sector, some 2,126,000 were employed in total. R&D employment was some 35,000 or about 1.6% of total employment.[41]

Firms in the GSME sample employ 65,213 persons. The total employment in R&D units is 749 persons or 1.1% of all employees. The total GSME employment in manufacturing is 25,728 employees. R&D units in manufacturing employ 419 persons or 1.7% of the total. Thus R&D accounts for a relatively small percentage of total employment in the small-firm sample, but this percentage is a little higher than that of the population as a whole.[42]

An alternate measure of importance is provided by the average ratio of R&D employment to total employment for the firms that have an R&D unit. For the total GSME sample, this is 7.5%. The mean R&D-to-sales ratio for this group is 4.5%.

Investment in R&D for product and process innovations. Employment is only one of the inputs into the R&D process. Expenditures are also made for materials, capital equipment, and for contract research. The mean proportion of total investment that is devoted to R&D for product and process innovation is 13% and 3.6%, respectively, in the 1989-91 period. During this recessionary period, both product- and process-innovation investment expenditures increase from 11.9% and 3.2% of the total in 1989 to 14.6% and 4.1% in 1991.[43]

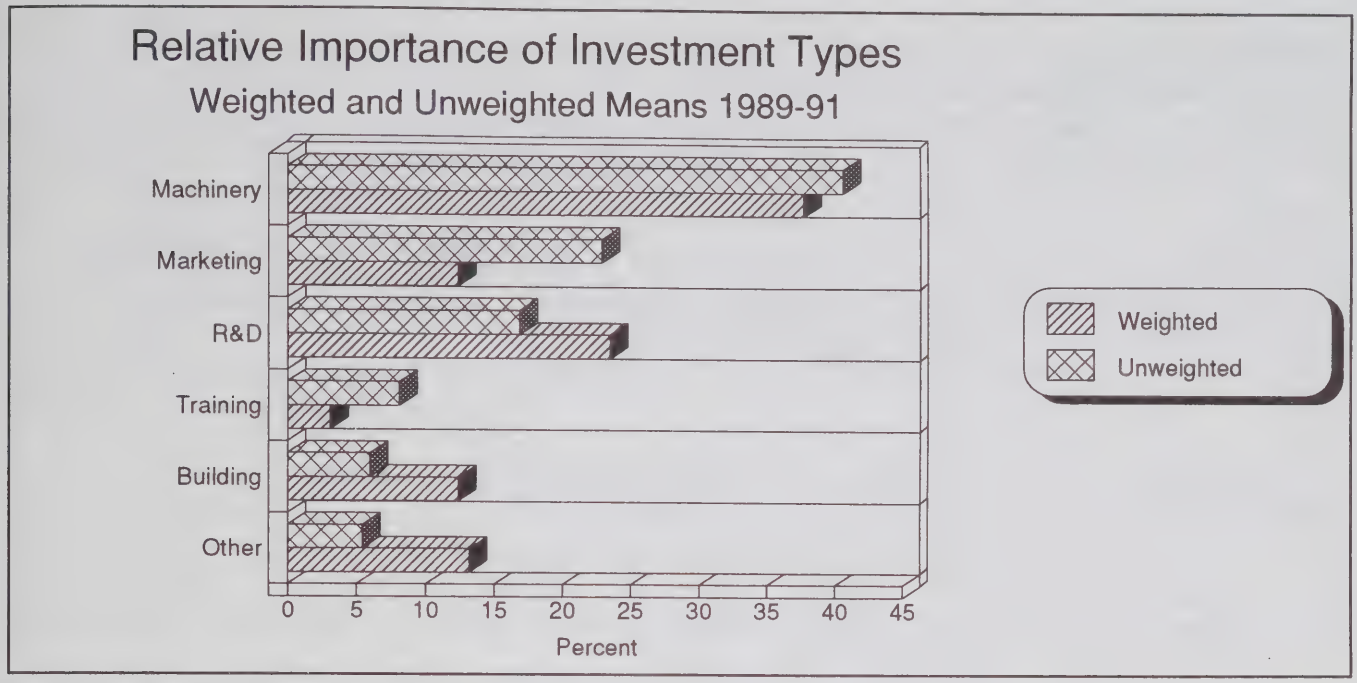


Figure 12. Relative Importance of Investment Categories

Product innovation received about four times the expenditures on process innovations for GSMEs. For Canada, this ratio was about 6.[44] Once more, GSMEs place relatively more emphasis on process innovations than do other firms.

A simple average of investment expenditure by category, as was presented in Figure 8, provides a representative profile of the GSME population. It does not show where most investment expenditures are made. That requires a weighted average of expenditures as a proportion of total investment.[45] Both the simple and the weighted averages are presented in Figure 12 for the period 1989-91. The weighted average indicates that R&D spending accounts for almost 24% of total spending and gives even more importance to R&D.

R&D-to-Sales Ratios. Perhaps the most widely used measure of R&D intensity is the ratio of R&D to sales. In 1989, industrial R&D spending in Canada was about 0.7% of gross domestic product. Current intramural expenditures made up about 87% of the total expenditures and accounted for 1.4% of the sales of R&D performing companies.

For the GSMEs, the weighted average of the ratio of R&D expenditures to company sales for those companies performing R&D is 2.2% in 1989, 2.4% in 1990, and 3.1% in 1991. While this is higher than the national average, the intensity of R&D at the national level declines by firm size and the GSME sample is on average smaller than the national average.[46]

Only about half of those reporting R&D expenditures also report a separate R&D unit. For this group, the average R&D-to-sales ratio is 3.7% in 1991. The group that does not have a separate R&D unit has an average R&D-to-sales ratio of 2.4%.[47] A separate R&D unit is not required for substantial R&D expenditures.

Table 12
Research and Development Intensity by Size Class

Size Class ($ Million)	Average R&D/Sales Ratio for 1991 (Percent)[1]		
	All Firms	Firms Without R&D Unit	Firms With R&D Unit
< 1	11.9	17.0	7.4
1-10	2.9	1.7	3.9
10-50	4.5	6.7	2.7
All	3.1	2.4	3.7

[1] Ratios are calculated as sales-weighted means.

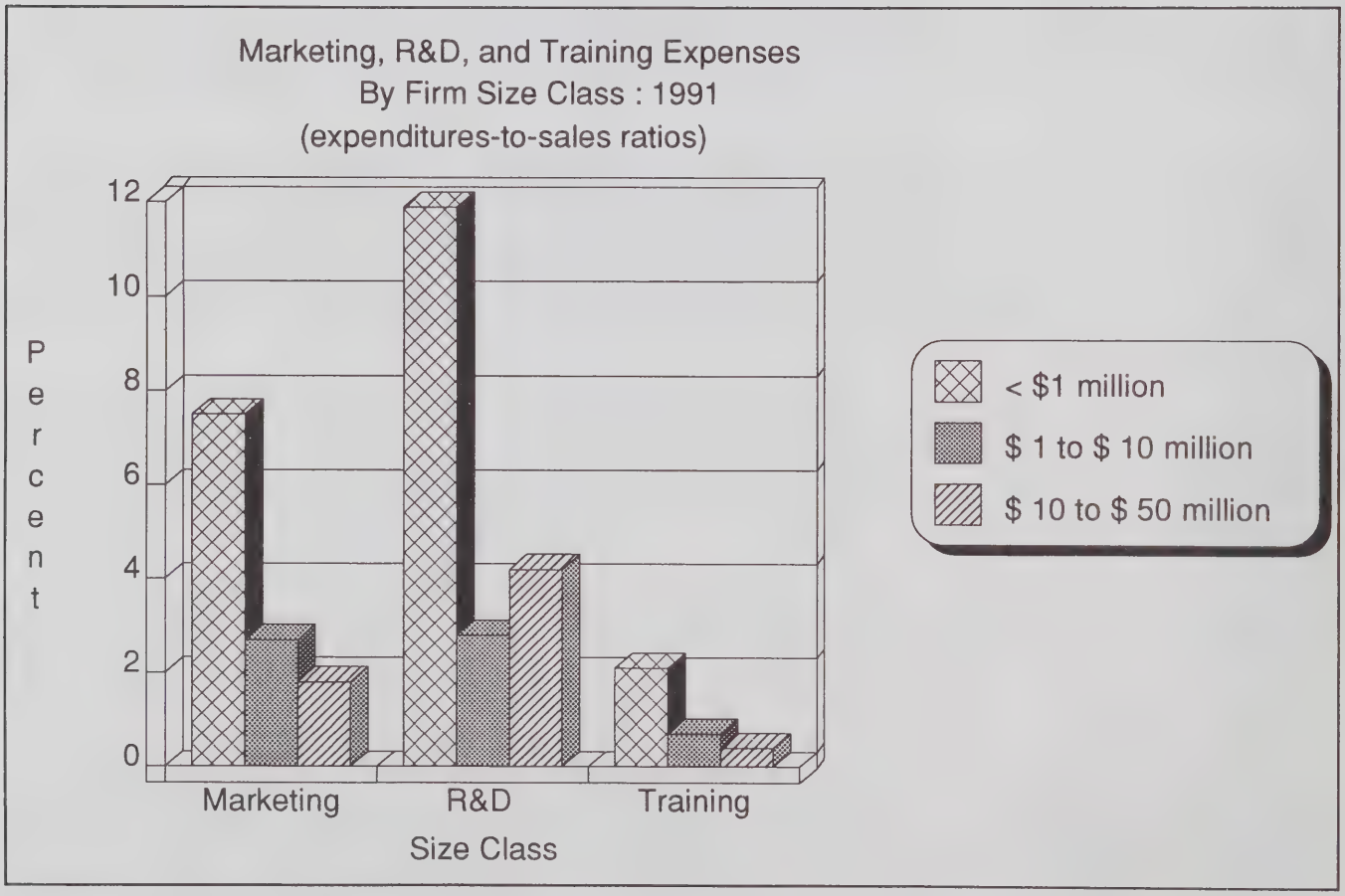


Figure 13. Marketing, R&D, and Training by Size Class

The 1991 R&D-to-sales ratios for the group having an R&D unit and for those not reporting such a unit are presented by size class in Table 12. For all firms reporting R&D expenditures, the weighted average R&D-to-sales ratio declines from 11.9% for firms with less than $1 million in annual sales to 4.5% for those with annual sales between $10 and $50 million. The R&D-to-sales ratio is inversely related to sales for firms with and without an R&D unit.

Small firms also invest more per dollar of sales in the other intangible-investment categories. Declines across size classes occur for all three forms of intangible investments: marketing, R&D, and training. Weighted average expenditure-per-sales ratios for those firms performing R&D, marketing, and training are presented in Figure 13. Per dollar of sales, the smallest firms spend more on intangible investment than do larger firms.

Comparisons of the R&D-to-sales ratios to the training-, marketing-, machinery- and building-to-sales ratios are made in Figure 14. Both simple and weighted averages for the entire sample of firms that report investment expenditure of any type are presented.[48] Using the unweighted average, R&D ranks third after marketing and machinery. However, it moves up to second place, after machinery expenditures, when the weighted mean is taken. Large firms in the sample invest more heavily in R&D.

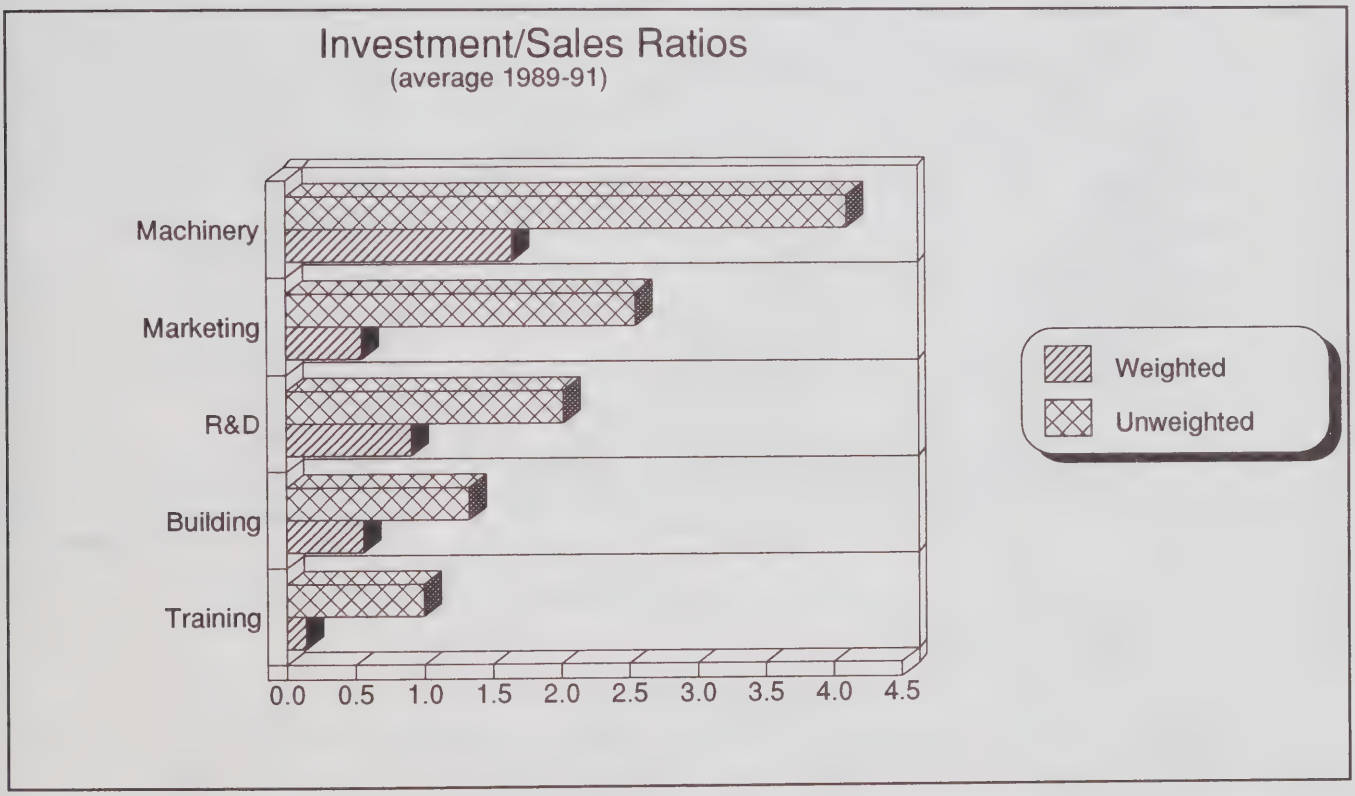


Figure 14. Investment-to-Sales Ratios

b) Sources of innovation

Information on the sources of innovation complements and supplements the data on R&D intensity of small firms. It indicates how many firms consider themselves to be innovative and reveals whether the firm is outward- or inward-looking. A firm where ideas for innovation come from management or parent/affiliates is referred to as a top-down firm; one where ideas come from an R&D, production, or marketing division is the opposite. A firm whose ideas for innovation come from suppliers, customers, or competitors is classified as outward-oriented; one that relies on in-house sources such as management, marketing, R&D, or production is inward-oriented.

GSMEs were asked to evaluate the importance of these internal and external sources for innovation and, in addition, the importance of Canadian patents and licences, foreign patents and licences, parent or affiliated firms, and government contracts were included as possible sources of innovation. The scoring was: 0 (not applicable), 1 (not important), 2 (slightly important), 3 (important), 4 (very important), and 5 (crucial).

Almost 55% of GSMEs responded that they had introduced innovations based on one of these sources. Innovation then is much more pervasive in the GSME population than R&D figures would suggest. It is certainly larger than the 33% that valued R&D strategy as having some importance.

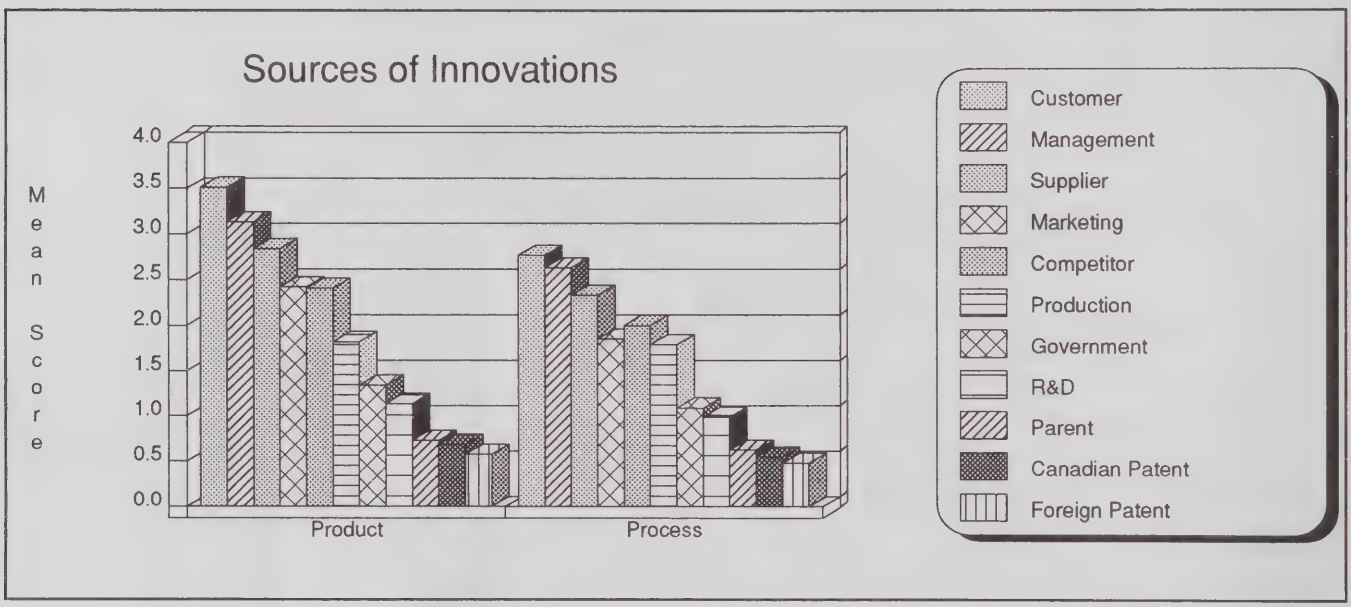


Figure 15. Sources of Innovations

Figure 15 provides the average score attributed to various sources of product and process innovations.[49] The mid-point for the six response codes used to answer the question is 2.5.

Customers provide the most important source for product innovations, with a mean score (standard error) of 3.5 (0.05).[50] The most important internal source is management with a score of 3.1 (0.05). The second most important external source of innovations is provided by suppliers with a mean score of 2.8 (0.06). The least important sources are Canadian and foreign patents, licences and trade marks

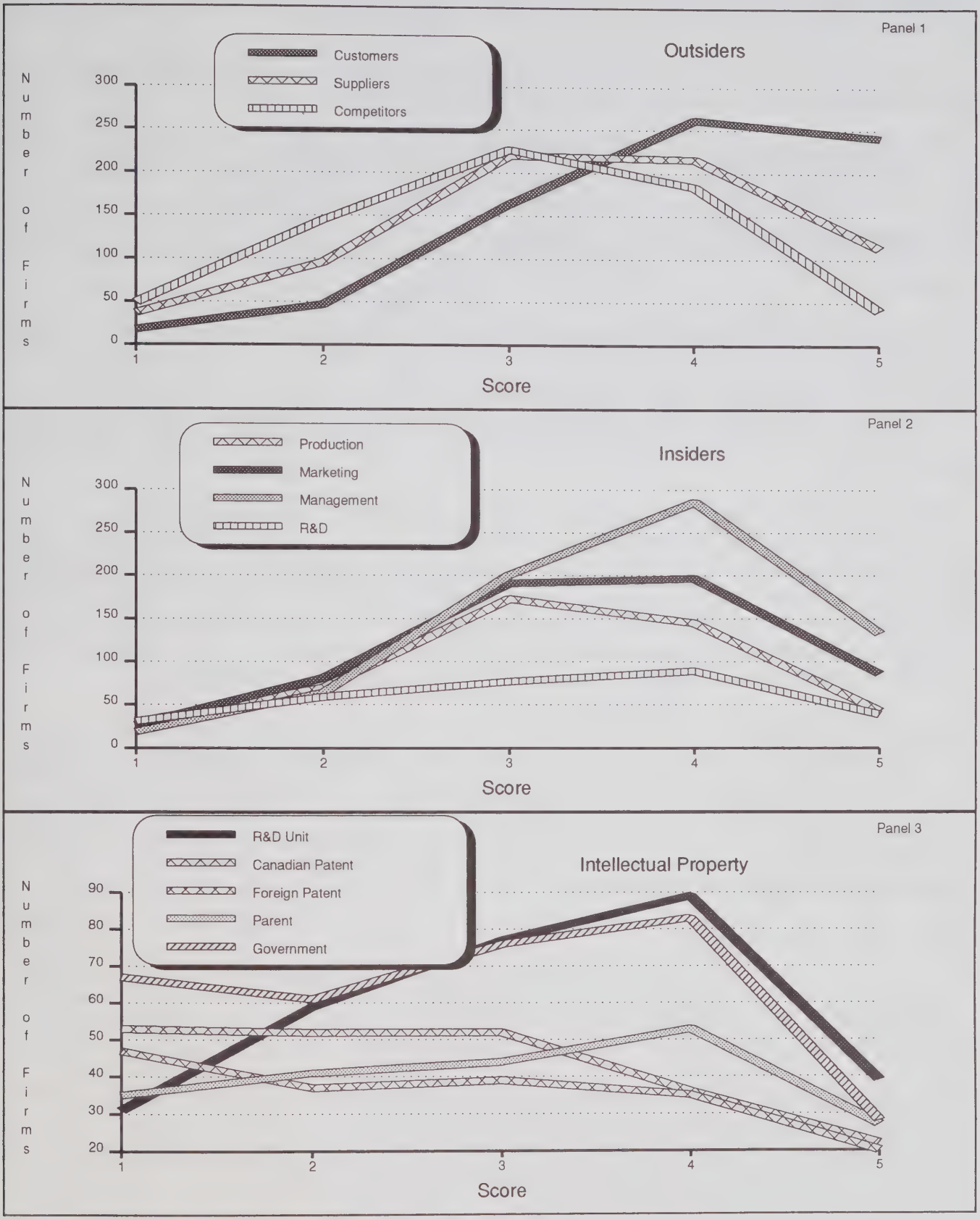


Figure 16. Sources of Product Innovations: Distributions

with mean scores of 0.7 (0.05) and 0.6 (0.04), respectively. The relative importance of the sources for process innovations is quite similar to that for product innovations.

The importance of customers and management as sources for innovations indicates that GSMEs are demand-driven and top-down firms.

The distributions of the positive responses are plotted in Figure 16. Panel 1 contains the responses for the three outside influences: customers, suppliers, and competitors. Customers dominate the two other outside sources. The largest number of responses (the mode) for customers as a source of ideas for innovations occurs at 4 (very important), but this source is also scored as 5 (crucial) by a very large number of firms. The other two outside sources—suppliers and competitors—have a mode at 3 (important).

Panel 2 of Figure 16 plots the distribution for the four internal sources. Here management dominates with the greatest number of responses at 4 (very important). Marketing is everywhere higher than production, which is in turn higher than R&D. The distribution of all four of the inside sources is skewed to the right. While inside sources may receive slightly lower average scores than outside sources, the value of their contribution is considered to be very important when they relate to innovation.

Finally, panel 3 of Figure 16 compares the distribution of R&D, government contracts, Canadian patents, foreign patents, and the parent or affiliated company. It is noteworthy that government contracts have almost the same distribution as R&D. Both of these are skewed to the right, thereby suggesting once again that, when these sources provide an aid to innovation, they are perceived to be very important. This is also the case for parent-company help as a source of innovation. On the other hand, both Canadian and foreign patents receive more negative responses—1 (not important) and 2 (slightly important)—than positive responses—4 (very important) and 5 (crucial).

These scores suggest that small firms consider themselves as innovative. They also see themselves to be both outward-oriented and driven from the top down. Three of the top five sources of innovation come from outsiders—customers, suppliers, and competitors. The other two are management and marketing. Despite the higher average scores assigned to the outside sources, the inside sources have a higher proportion of their contributions scored in the categories 4 (very important) or 5 (crucial). Outside sources may provide the stimulus to innovation, but internal capabilities are seen to be the crucial factor in implementing innovation.

3.4.5 Market Orientation

Firms are outward-oriented if they sell to markets outside their own region—either in the same or in other regions. The penetration of new external markets is often taken to be a mark of success, of being able to compete in a world where standards of excellence are greater than in home markets.

The penetration of foreign markets or globalization is associated with giant multinationals. There is a long tradition of arguing for larger units so that exports will increase. Implicitly then, small firms are not regarded as successful exporters. Indeed, one of the criticisms that is made of SMEs is that they are largely dependent upon domestic markets (Van Heesch, 1986, p. 129).[51]

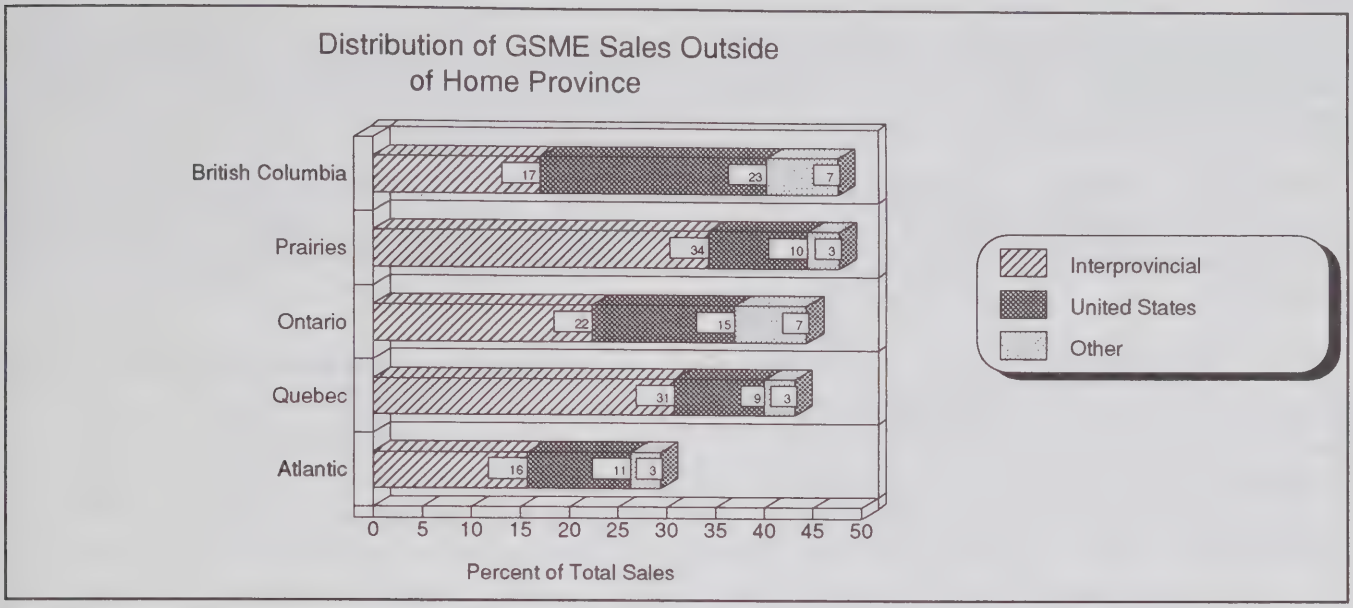


Figure 17. Extra-Provincial Sales for Manufacturing GSMEs

Table 13
Interregional Trade in the Manufacturing Sector

Origin	Percentage of Shipments Made from Home Region to Other Regions[1]											
	Destination											
	Atlantic		Quebec		Ontario		Prairies		British Columbia		World	
	GSME	All Firms	GSME	All Firms	GSME	All Firms	GSME	All Firms	GSME	All Firms	GSME	All Firms
Atlantic	70.7	42.6	4.8	8.7	10.3	9.0	0.4	1.8	0.2	0.6	13.6	37.2
Quebec	4.0	4.1	56.8	43.9	23.1	17.6	2.1	4.4	1.6	2.7	12.4	27.3
Ontario	2.9	3.2	9.5	8.8	55.6	42.5	5.6	6.7	4.4	3.2	22.0	35.5
Prairies	0.5	0.6	0.7	4.1	25.2	8.3	52.3	55.5	7.9	6.6	13.5	25.3
British Columbia	0.7	0.3	2.0	1.7	5.4	4.5	9.1	7.8	52.4	37.2	30.4	48.5

[1] Percentages are sales-weighted means.

Evidence on the market orientation of GSMEs is provided by the extent to which sales are made in markets outside their home region. The results show that GSMEs in all regions are outward-oriented. GSME activity is not restricted solely to their home regions.

Table 13 provides the geographic distribution of sales for GSMEs in the manufacturing sector across the following regions: the Atlantic, Quebec, Ontario, the Prairies, British Columbia, the United States and other areas. Figure 17 presents the percentage of sales that are made to areas outside the firms' home region.

Companies in British Columbia and the Prairies are the most outward-oriented, selling 48% of their production outside their home region. British Columbia has one of the highest percentage of sales made to export markets (30%). The Prairie provinces are outward-looking because of the high percentage of sales made to other regions. The Atlantic GSMEs tend to concentrate most on home markets. Although their sales to world markets are about the same as those for Quebec, their GSMEs engage in less interprovincial trade. While Ontario and Quebec have about the same overall percentage of sales made outside their home base, they differ in that Quebec relies more on interprovincial trade and Ontario has a greater percentage of its sales made to the United States and other foreign countries. Quebec small businesses tend to rely more on the Ontario market than small businesses in Ontario rely on the Quebec market.

The interregional trade pattern for the entire population of manufacturing firms is also presented in Table 13.[52] GSMEs sell a larger percentage of their production in their home region than does the entire population of manufacturing firms. The percentage of their sales going to other provinces is about the same, but the proportion that is exported to other countries is lower. Nonetheless, GSMEs in the manufacturing sector do achieve a significant level of export activity outside of Canada. While the percentages of GSME sales that are exported to world markets are generally smaller than for the Canadian manufacturing sector (which is dominated by large firms), GSMEs are active participants in international trade.

3.5 The Strategies of GSMEs

The previous sections have summarized the importance attributed by firms to marketing, human resources, technology, and innovation activity.

This section provides more detail on the nature of the strategies employed in five major areas: management, marketing, human resources, technology, production efficiency, and government assistance.

The following issues were addressed:

- the importance placed on new management techniques,
- whether marketing strategy emphasizes the introduction of new products in new markets,
- whether technology strategy involves the development of new cutting-edge technologies,
- whether human-resource strategies concentrate on training,
- whether production strategy focuses on ways of reducing material, energy, or labour costs,
- the type of government assistance that is valued most highly.

In each case, firms were asked to score several alternative schemes that were presented to them by ranking each from 0 to 5: 0 (not applicable); 1 (not important), 2 (slightly important), 3 (important), 4 (very important), and 5 (crucial). A positive score indicates that the policy or strategy is applicable to the respondent.

3.5.1 Management Practices

Management was stressed as the most important factor in the success of small- and medium-sized firms. In order to isolate the management issues that receive the most attention, GSMEs were asked to rank the importance of:

- improving management incentives through compensation schemes,
- innovative organizational structures,
- just-in-time inventory control,
- process control,
- total quality management.

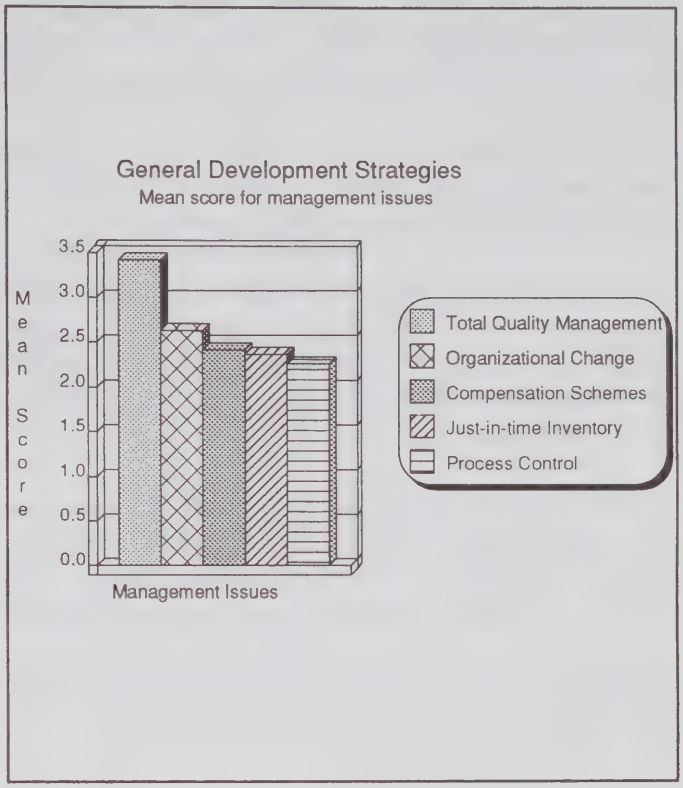


Figure 18. Management-Development Programs

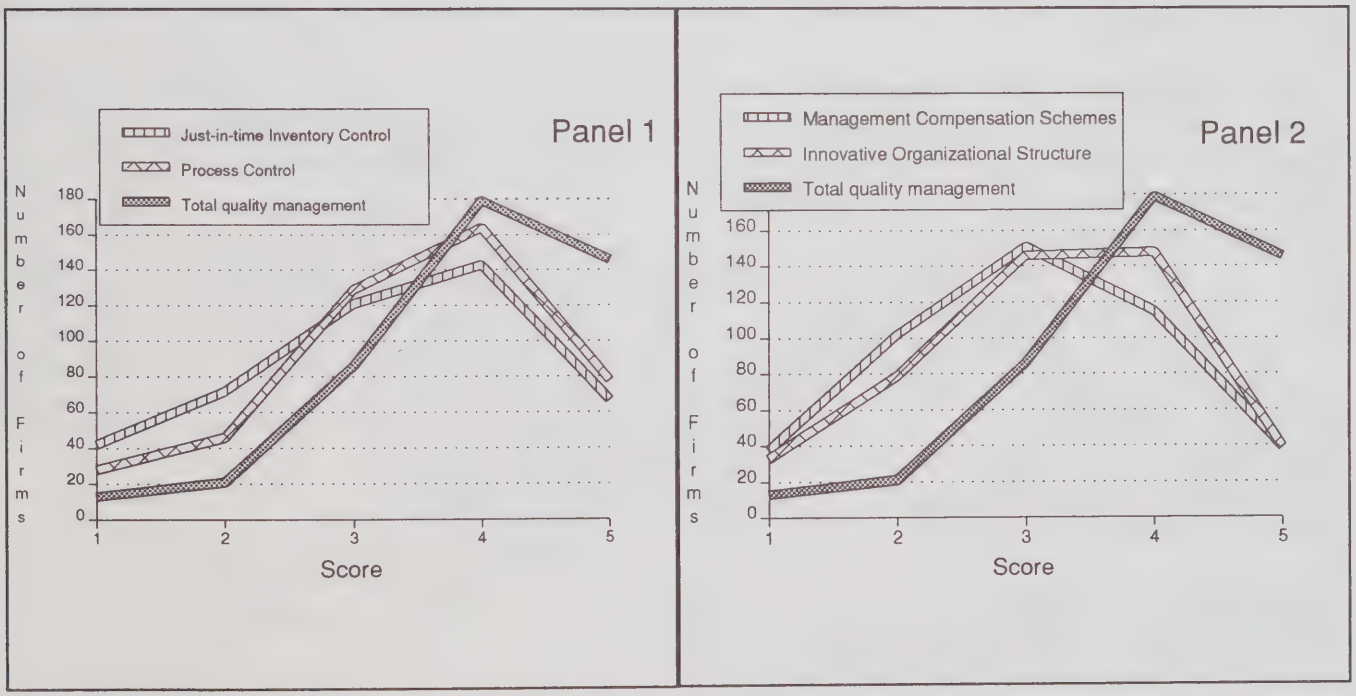


Figure 19. Score Distributions for Management Strategies

This ranking of management issues permits a distinction to be drawn between the relative importance that is placed on the comprehensive management of resources (total quality management) as opposed to individual areas such as management incentives and organizational structures.

The average importance of these practices for the responding GSMEs is presented in Figure 18 for the comprehensive sample—those firms scoring any part of the question positively. For this sample, the mid-point of the possible responses is 2.5.[53]

On average, GSMEs value the comprehensive management of resources more highly than individual areas such as management incentives and organizational structures. Total quality management (TQM) is given the highest mean score (standard error) of 3.4(0.05); innovative organizational structures—2.6 (0.05); management incentive schemes—2.4 (0.05); just-in-time inventory control—2.4 (0.06); and process control—2.3 (0.06).

The ranking of the mean scores for the entire sample is affected by the pattern of missing responses. The percentage of missing responses is smallest for total quality management (11%) and increases continuously to reach 29% for just-in-time inventory control and 35% for process control. When only those firms that score all management practices positively (the positive-response comprehensive sample) are used to calculate the average, the latter two, with mean scores (standard errors) of 3.5 (0.05) and 3.3 (0.05), move up to second place just behind total quality management with a mean score (standard error) of 4.0 (0.05) (see Appendix III, Table 3.3).[54]

The distribution of scores for this group of firms (the positive-response comprehensive sample) is presented in Figure 19, panels 1 and 2. Total quality management, process control, and just-in-time inventory control all have modes (the largest number of responses) at 4 (very important). The question on innovative organizational structures has a split mode at both 3 (important) and 4 (very important). Only management incentives is centred on a value of 3 (important).

In conclusion, GSMEs stress total quality management and general management structures. Where process control and just-in-time inventory control are relevant, they too are given considerable importance.

3.5.2 Markets and Products Strategy

GSMEs place an emphasis on marketing strategies that is second only to the importance attributed to management. They surpass their competitors in such characteristics as quality, customer service, and flexibility.

The survey investigated the extent to which GSMEs adopted innovative and aggressive as opposed to conservative marketing strategies. This was done by focusing on the emphasis given to new products and new markets.

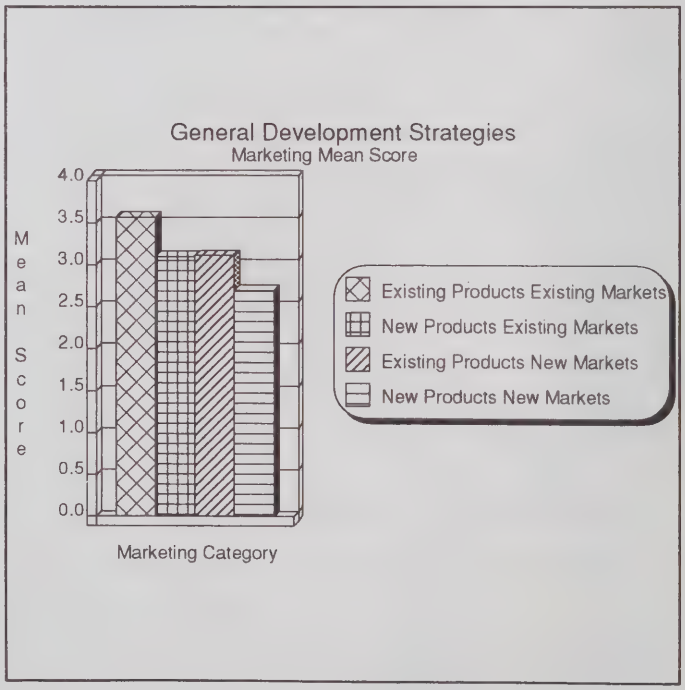


Figure 20. Marketing-Development Strategies: Mean Score

GSMEs were asked to score the importance they place on:

- selling existing products in present markets,
- introducing new products in present markets,
- introducing current products in new markets,
- introducing new products in new markets.

The first strategy is the least aggressive. The second and third contain one aspect of novelty. The last strategy is the most aggressive in that it extends sales both to new products and to new markets.

Figure 20 presents the average score for each of the four categories for those GSMEs that responded positively to any part of this question. Since 0 or non-applicable is included as a valid response, the mid-point of the possible responses is 2.5.

GSMEs place the highest score on capitalizing on existing strengths. Selling existing products in present markets receives the highest mean score (standard error) of 3.6 (0.05). Moving either to new products in existing markets or new markets for existing products receives a mean score of 3.1 (0.05). Following a strategy of new products in new markets receives a mean score of 2.7 (0.05).

These scores indicate that GSMEs focus on maintaining market share in their traditional markets but, at the same time, they stress expansion into new markets. The percentage of the sample that stresses one aspect of novelty, either on the product or market side, as 4 (very important) or 5 (crucial), is substantial. Some 49% rank these strategies as important to their growth. Some 47% score moving both to new products and new markets as 4 (very important) or 5 (crucial).

The relative importance of the different strategies as provided by the above mean scores once more is affected by the pattern of responses indicating that a particular strategy was 0 (not applicable). Only 9% of those answering indicate that the least aggressive strategy of relying on existing products and

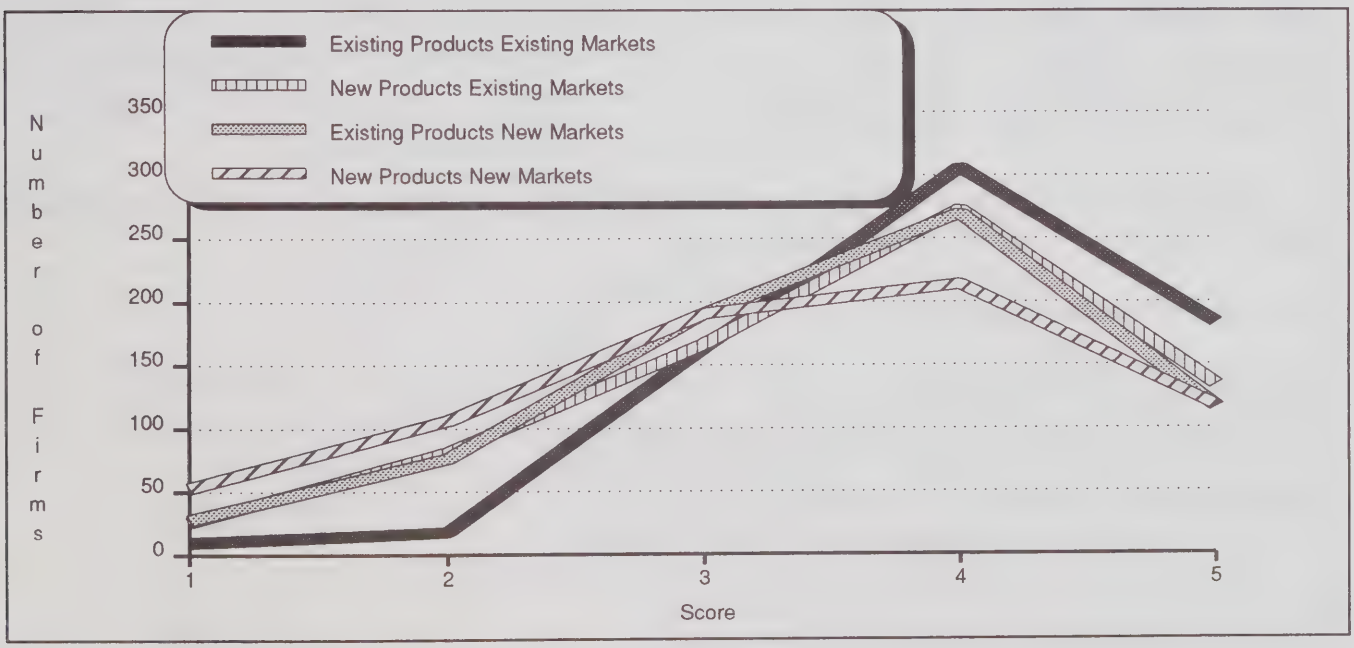


Figure 21. Score Distributions for Marketing Strategies

existing markets is "not applicable"; for the most aggressive strategy, which involves selling new products in new markets, some 19% fall into the "not applicable" group.

In order to compare the value attributed to the different strategies, the distribution of the responses for just those firms that score each strategy positively (the positive-response comprehensive sample) is presented in Figure 21. All four strategies have modes at 4 (very important). At this value, the most aggressive strategy receives about two-thirds the number of responses that the least aggressive strategy receives.

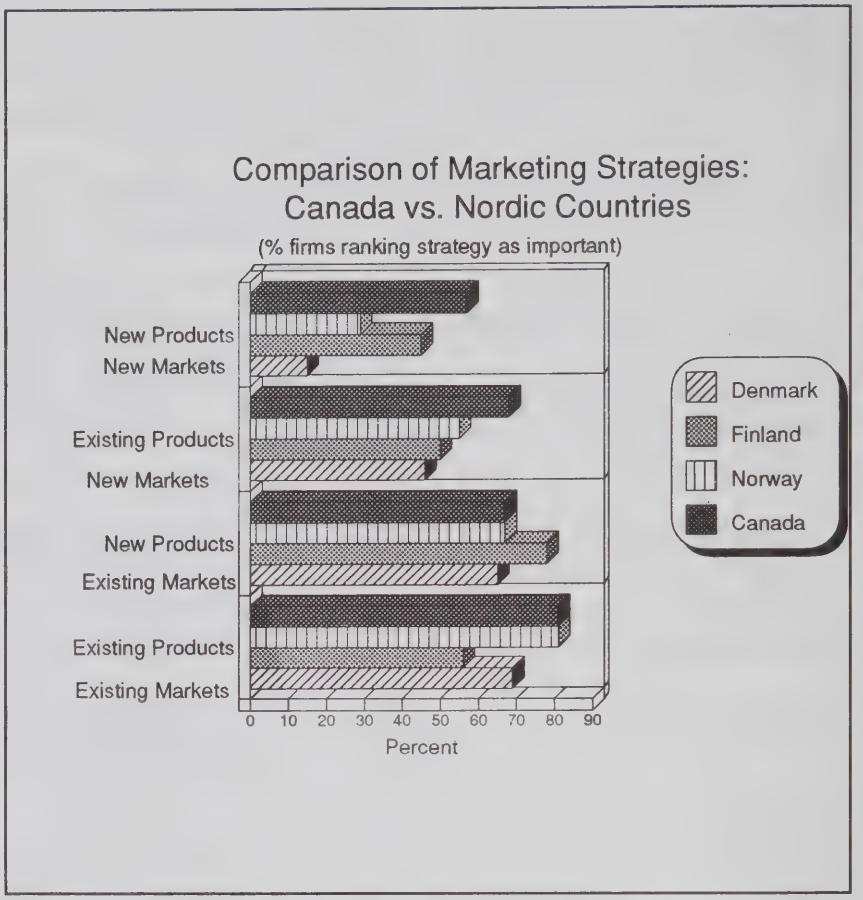


Figure 22. Canada vs. Nordic Country Marketing Strategies

GSME product strategy can be compared to that which firms in the Nordic countries have adopted. Figure 22 presents the percentage of firms that ranked each strategy as being important[55] in Canada, Denmark, Finland, and Norway. Canadian GSMEs do not place a higher value on the strategy of producing new products for existing markets, but do place a higher value for both questions involving new markets—perhaps reflecting the outward orientation of Canadian business. What is particularly noteworthy is that Canadian GSMEs also do better than their Nordic counterparts with regards to the most aggressive strategy—the introduction of new products in new markets.

In conclusion, a substantial proportion of GSMEs, while not neglecting their original market base, have adopted aggressive marketing strategies.

3.5.3 Human-Resources Strategy

Human-resources strategy was ranked third in importance after management and marketing. Strategies in this area vary from the implementation of training to new incentive structures associated with the remuneration package. To elaborate on strategies that are being followed, the survey investigated the importance GSMEs place on:

- continuous staff training,
- innovative compensation packages,
- staff motivation in other ways.

Figure 23 presents the average score for those firms that placed a positive value on at least one of the categories (the comprehensive sample). Human-resources strategy focuses first on general motivation techniques, then on staff training, and finally on innovative compensation packages. Their average scores (standard errors) are 3.3 (0.03), 3.1 (0.03) and 2.5 (0.04), respectively. This indicates that non-pecuniary approaches are the primary methods used to motivate and enhance the human-resources capability in GSMEs.

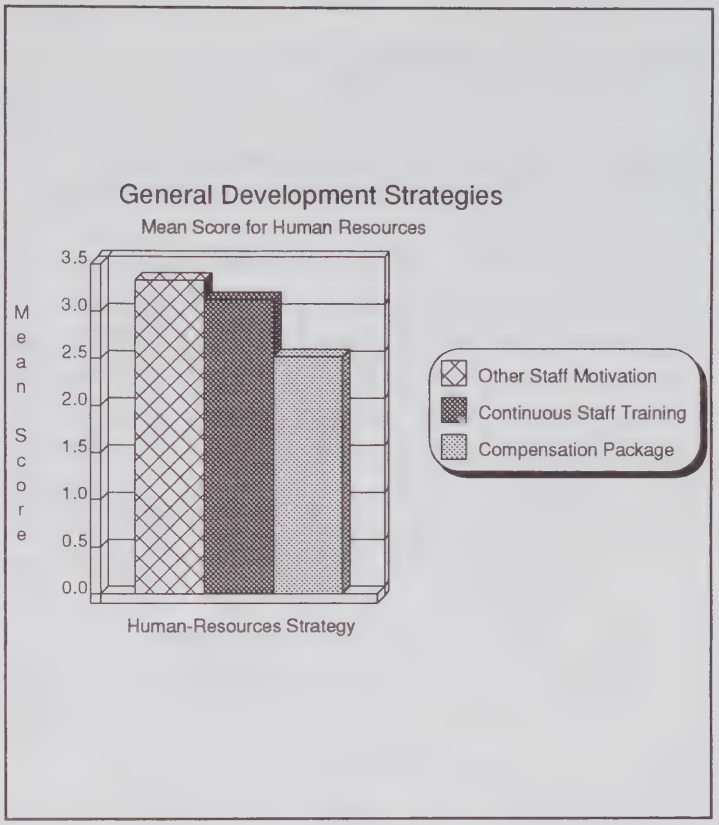


Figure 23. Human-Resource Programs: Mean Score

The distribution of responses for just those firms that scored each of these strategies positively (the positive-response comprehensive sample) is presented in Figure 24. The "other motivational techniques" category has about an equal number of responses at 4 (very important) and at 3 (important). The answers to training centre on 3 (important) but, as with "the other motivation" program, are skewed upwards. These two programs are regarded as being the most important by those that rank all programs as being important to their firm.

The fact that GSMEs place a high value on staff training reinforces the earlier finding that they place a high value on employee skills. GSMEs not only need skilled staff essential to their growth strategy; they also take an active interest in upgrading these skills.

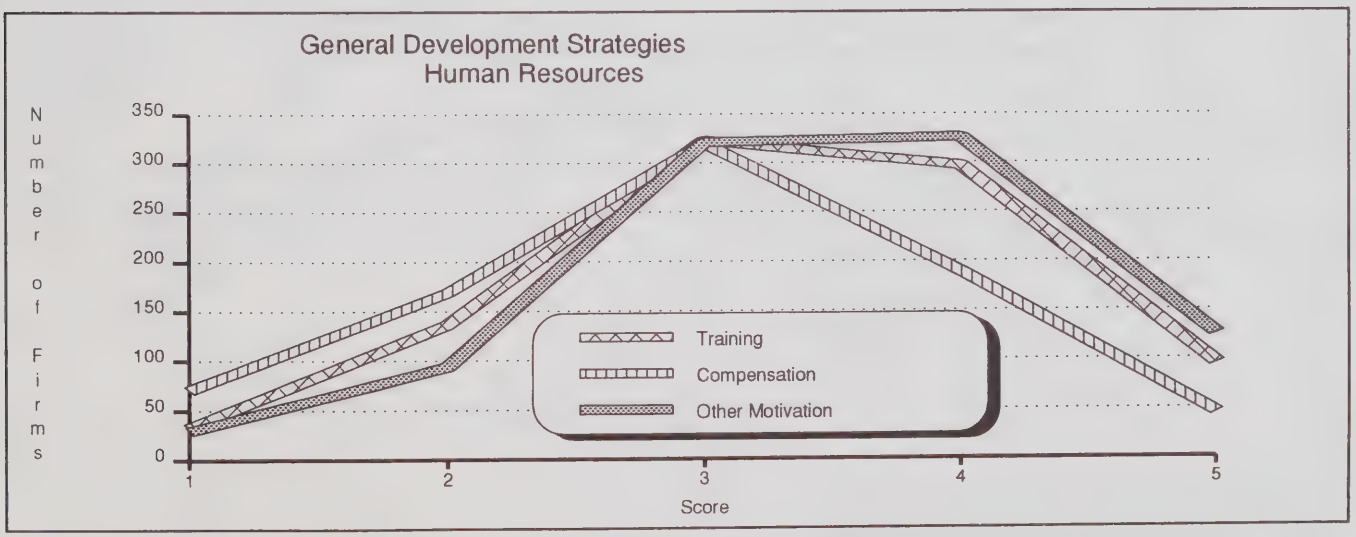


Figure 24. Score Distribution for Human-Resource Programs

3.5.4 Technology Strategy

The direction of technology strategy is investigated by asking GSMEs to elaborate on the source of the technologies that are being used. The strategies were differentiated by the extent to which they involved the development and refinement of existing technologies as opposed to the creation or adoption of new technologies. Firms were asked to score the importance to them of:

- improving own existing technology,
- using the technology of others,
- developing new technology,
- refining the technology of others.

The second strategy is the least aggressive in that it simply uses the technology developed by others. The other three strategies involve the development of new technology in different ways. The first builds on own technology. The third breaks new ground by developing new technology from scratch. The fourth creates new technology by improving technology taken from other sources.

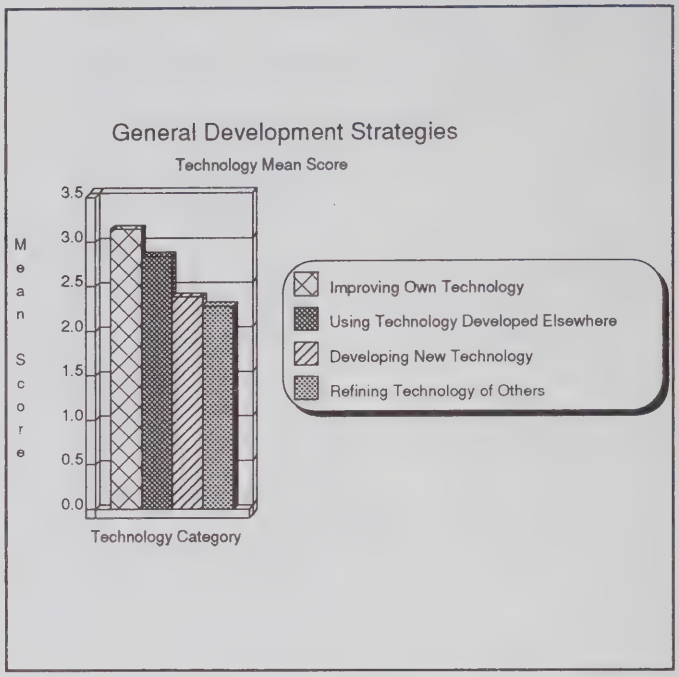


Figure 25. Technology-Development Strategies: Mean Score

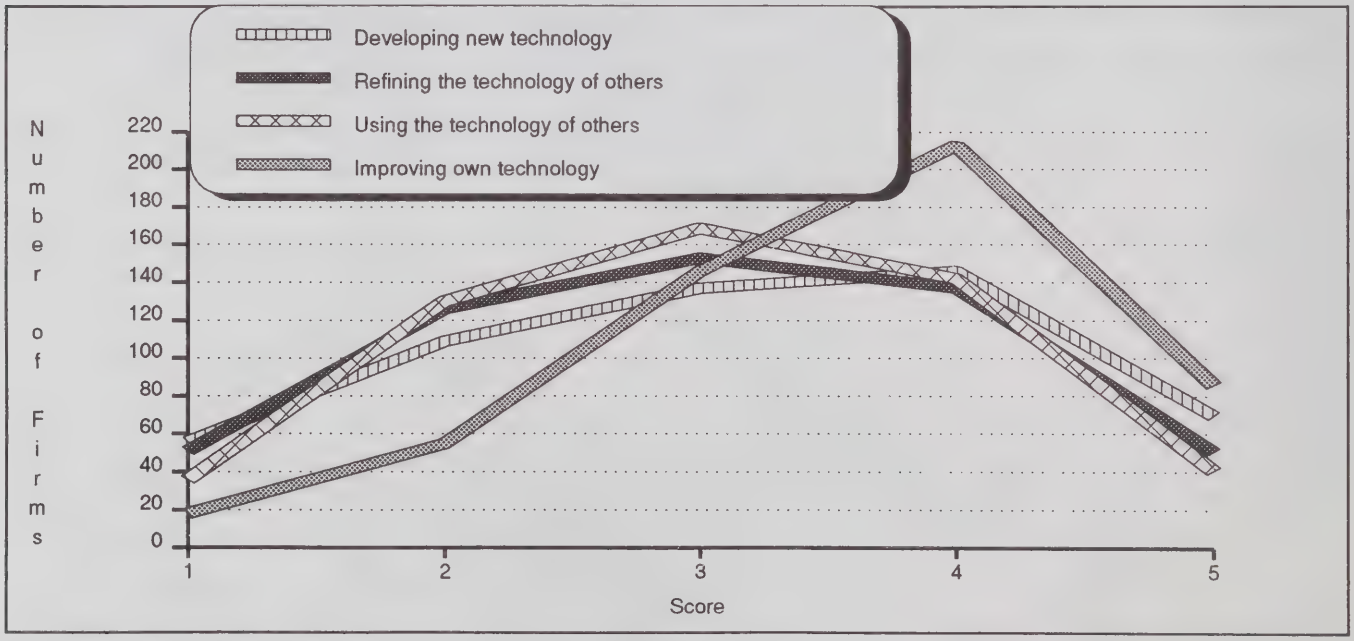


Figure 26. Score Distribution for Technology Strategies

The average scores are presented in Figure 25 for the firms that answered any of the sections positively (the comprehensive sample). "Improving own technology" receives the highest mean score (standard error) of 3.2 (0.05). The least aggressive strategy, which involves using technology developed by others, receives the second highest score of 2.8 (0.05). The two other aggressive strategies "developing new technology" and "refining the technology of others" have the lowest mean scores of 2.4 (0.06) and 2.3 (0.06), respectively.

Most of the difference in the scores assigned to the two most aggressive strategies and the second strategy, which involves adopting the technology of others, arises because of the large percentage of firms (24%) that do not consider the aggressive strategies as applicable. The distribution of responses for just those firms that rank each of these strategies positively (the positive-response comprehensive sample) is presented in Figure 26. The largest number of responses for the strategy "improving own technology" occurs at the value of 4 (very important). "Using the technology of others" and "refining the technology of others" have very similar distributions. Both have their largest number of responses (the mode) at 3 (important). Developing new technology has its mode at 4 (very important) and has a higher percentage of firms responding that this strategy is 4 (very important) or 5 (crucial) than either "using the technology of others" or "refining the technology of others". Some 41% of those firms that rank all technology strategies positively fall into this category; 31% if we consider all firms that answer any part of the question positively (the comprehensive sample).

After improving own technology, developing new technology then is seen to be more critical than either form of adoption. As was the case with marketing strategy, GSMEs build on existing strengths in technology strategy, but they also adopt aggressive strategies in new areas. More than a third of the sample place a very high importance on developing what is to them new technology.

3.5.5 Use of Production Inputs

Operating efficiency and productivity gains are improved when more or better products are produced from fewer or better inputs. During the last decade, productivity gains in Canada have fallen behind those of our major trading partners. The cause of the slowdown is not well understood.

In order to understand where small business is focusing its efforts to improve efficiency, GSMEs were asked to rank the importance that they place on:

- cutting labour costs,
- reducing energy costs,
- using existing materials more efficiently,
- using new materials.

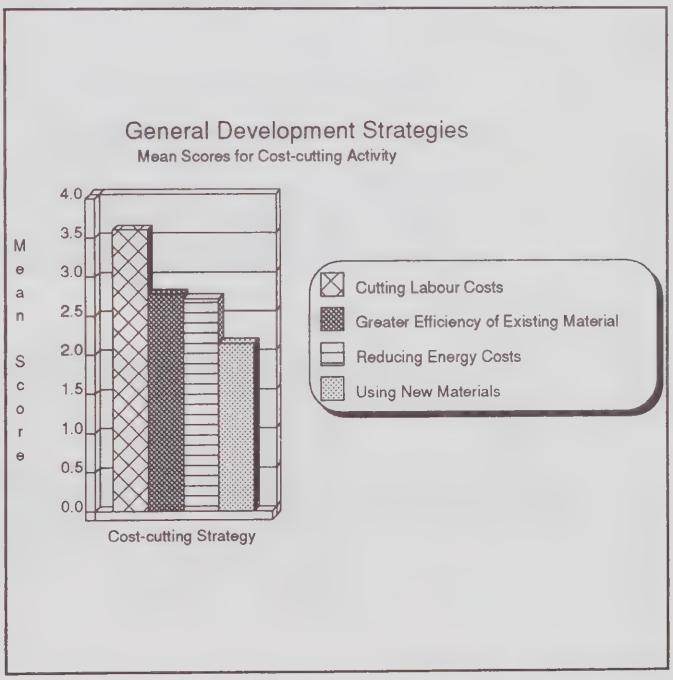


Figure 27. Input Programs: Mean Score

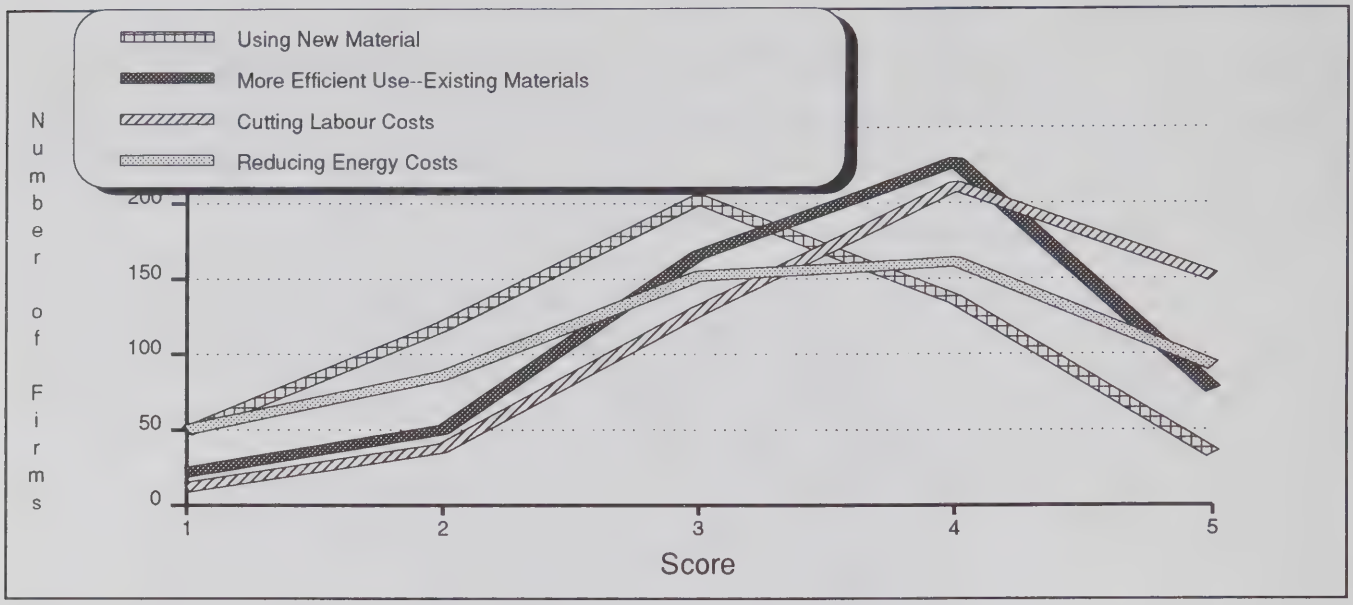


Figure 28. Score Distribution for Input Strategies

Figure 27 presents the average score for each of these strategies for those GSMEs that ranked at least one of these strategies positively (the comprehensive sample).

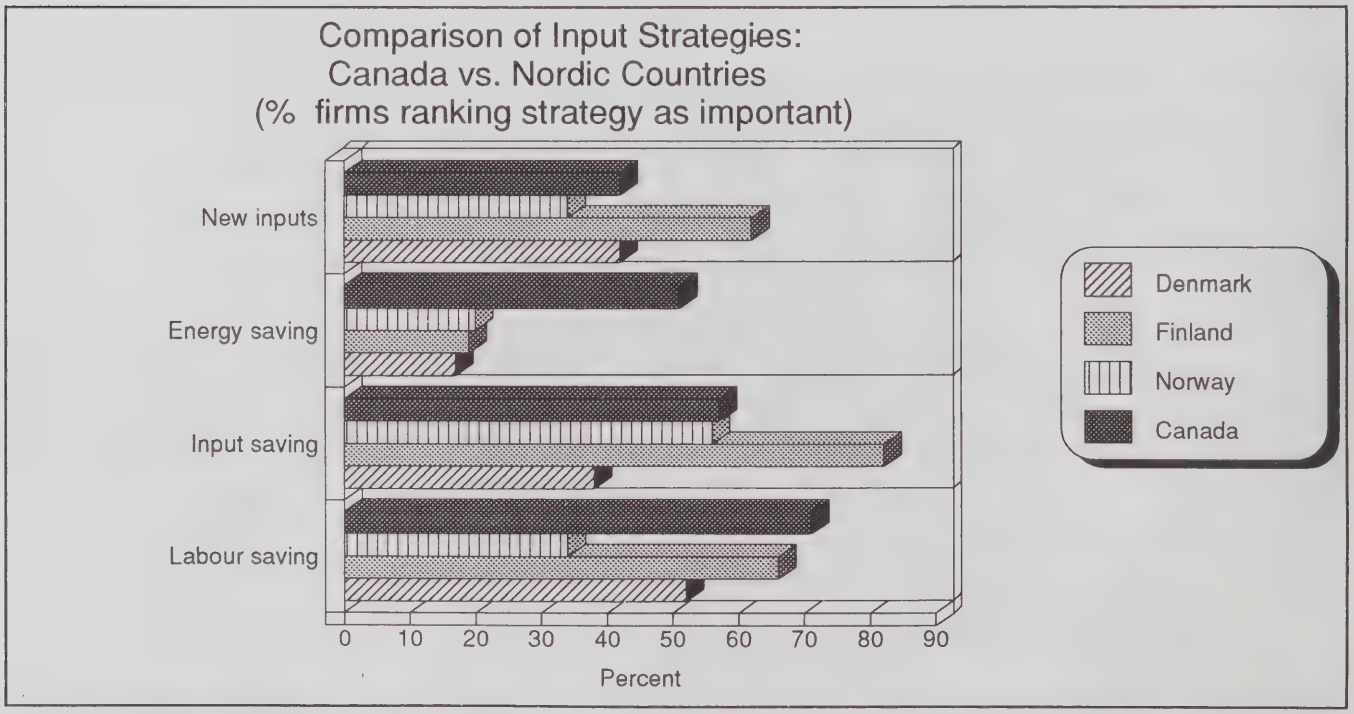


Figure 29. Canada vs. Nordic Country Input Strategies

Reducing labour costs receives the highest mean score of 3.6 (standard error of 0.04). More efficient use of existing materials receives a mean score of 2.8 (0.06) and reducing energy costs, a mean score of 2.7 (0.06). The use of new materials is lowest at 2.2 (0.06).

Because of the representation of service firms in the sample, between 20% and 30% of GSMEs respond that material-savings strategies are not relevant. The distribution of just those firms that scored each strategy positively (the positive-response comprehensive sample) is presented in Figure 28. Reducing labour costs and the more efficient use of existing materials both have the greatest number of responses at 4 (very important). However, there are twice as many firms scoring cutting labour costs as 5 (crucial) than there are firms indicating that improving materials efficiency is 5 (crucial). While the new-materials strategy is centred only on 3 (important), a significant proportion of the sample place a value of 4 (very important) or 5 (crucial) on this strategy. Both of the materials strategies then appear to be crucial to a small number of firms.

A comparison of the scores of Canadian GSMEs on the four input strategies can be made once again to the scores assigned by firms in the Nordic countries for a similar question. Figure 29 presents the percentage of firms that ranked each strategy as being important in Canada, Denmark, Finland, and Norway. Both Canada and Finland stress labour-saving strategies. Canada places much more importance on energy-saving strategies than do Nordic countries. Canada's scoring of materials strategies is about the same or better than Norway and Denmark but behind Finland.

In conclusion, GSMEs place their greatest emphasis on reducing labour costs in order to improve efficiency. Nevertheless, there is a substantial proportion of firms in the sample that rank "more efficient use of existing material" as 5 (crucial) or that are focusing on new materials.

3.5.6 Government-Program Utilization Strategy

Government programs ranked well after most other factors that GSMEs felt contributed to their success. Because of this, it is important to know which programs are valued most by small successful firms. These programs, of course, are delivered by federal, provincial, and municipal governments. The survey, therefore, asked GSMEs to rank the importance of the following government programs and services that were actually *utilized*:

- R&D tax incentives,
- government procurement,
- training programs,
- industrial support,
- export incentives,
- market-information services.

The rankings used were: 0 (not applicable), 1 (not important), 2 (slightly important), 3 (im-

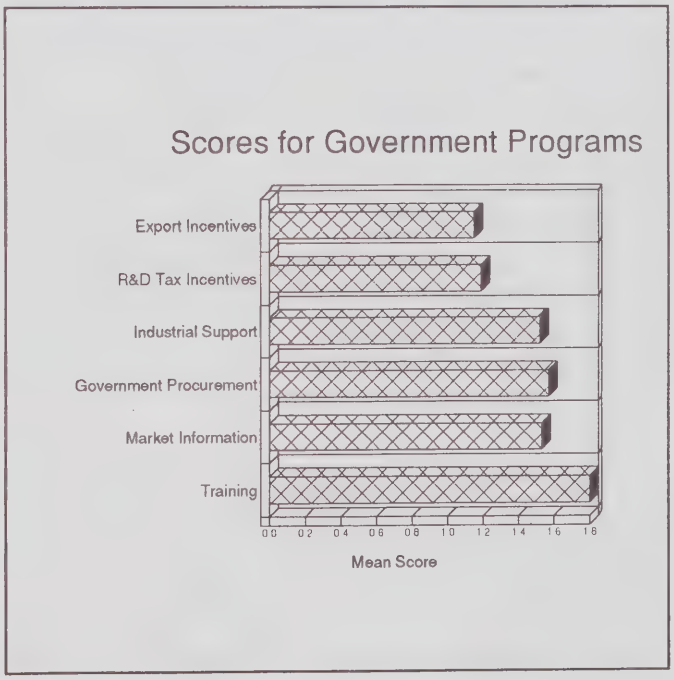


Figure 30. Government Programs: Mean Scores

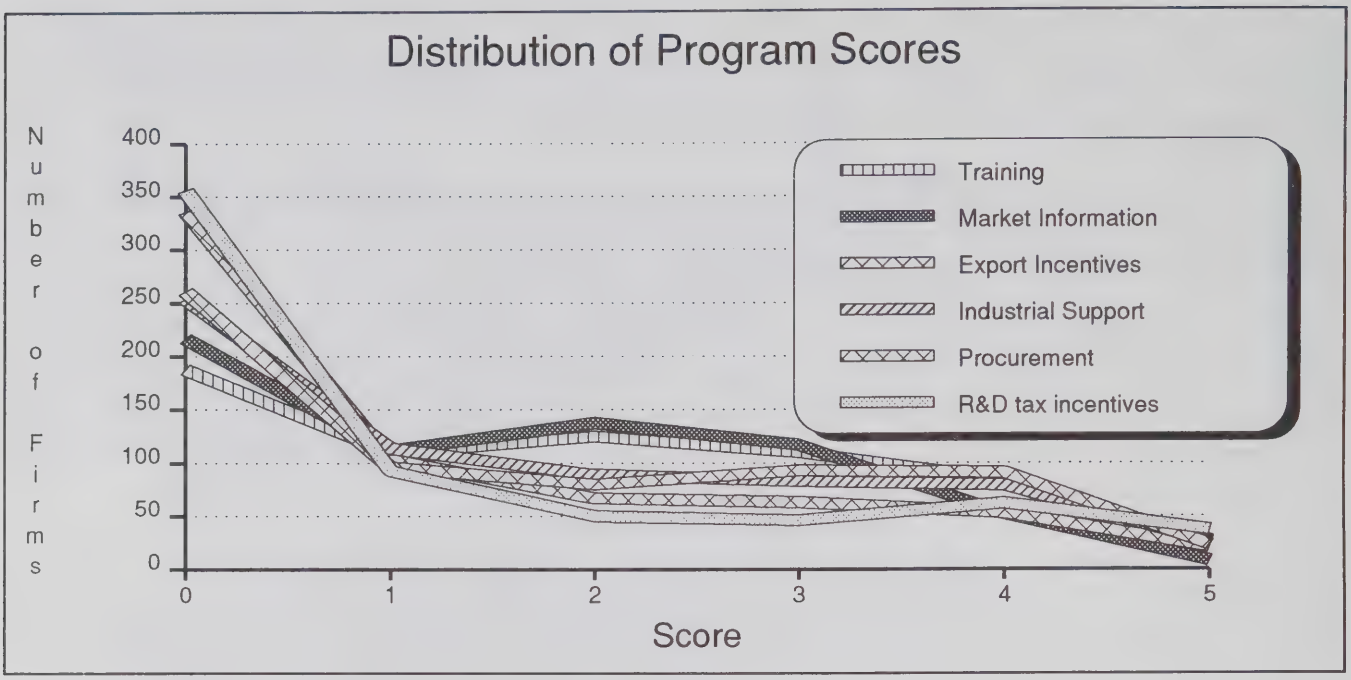


Figure 31. Score Distribution for Government Programs

portant), 4 (very important), and 5 (crucial). Some 44% of the sample indicated that they had utilized at least one of the programs, but a preponderance of these assigned at least one of the six programs a zero (not applicable), thereby indicating that the use of the programs varied substantially. Only 11% answered all questions with a positive ranking, thereby implying that they made use of all six programs.

The average score for each of these government programs for all GSMEs that scored at least one program positively (the comprehensive sample) is presented in Figure 30. In accordance with the earlier findings, the mean scores given to all government programs are low. The range is from 1.2 to 1.8. Government training programs are given the highest mean score (standard error) of 1.8 (0.06). Procurement, information, and industrial-support programs fall into a second group with mean scores around 1.5. The least important are R&D tax incentives and export incentives, both with mean scores of 1.2 (0.06).

The distribution of the responses for the comprehensive sample across categories is presented in Figure 31. R&D and export incentives have the largest number of answers with 0 (not applicable), presumably because the program was not used. Training and market-information services have the lowest number of firms answering 0 (not applicable).

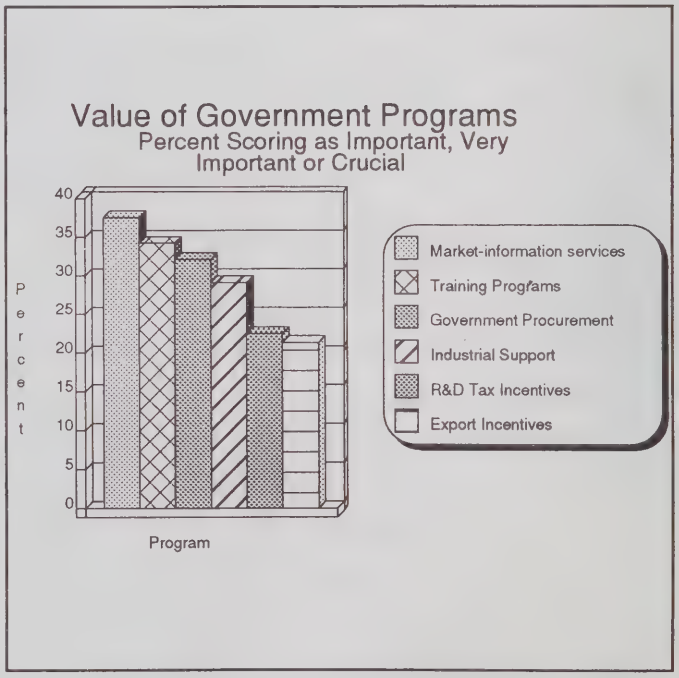


Figure 32. Government Programs: Percentage Above Important

In general, the greater the number of companies that participated in a program (firms that give a positive response) the greater is the concentration of the total answers in the group 1 (not important) or 2 (slightly important). For example, there are few zeros assigned to training and for those firms placing a positive score on training, the largest number of firms rank the program as 2 (slightly important). A large number of firms place a zero value on R&D and government procurement; but for firms that do assign a positive score to R&D tax incentives and government procurement, the largest number of responses occur at 4 (very important).

As an alternative to the average response, the number of firms that found the programs to be important can be used. This statistic is derived from the upper tail of the distribution of scores. The percentage of all firms that ranked the program as 3 (important), 4 (very important), or 5 (crucial) was calculated and plotted in Figure 32. Market-information and training programs come at the top of the list. R&D tax incentives and export incentives are at the bottom.

In conclusion, more GSMEs value market-information services and training services highly than they do other programs. They also tend to make greater use of these services. Nevertheless, there is room even here for improvement since a good proportion (some 36%) of the users find these programs to be 1 (not important) or 2 (only slightly important).

Government programs are offered by both federal and provincial levels of government. The value that is attached to the different programs might very well be expected to differ across the country if differences in local conditions lead to a different emphasis. Table 14 provides the mean scores attached to the different programs by region. There are several differences between the regional rankings and the national ranking. Training does not lead the list in the Atlantic; rather government procurement

Table 14
Average Importance Attributed to Government Programs by Region

Program	Atlantic	Quebec	Ontario	Prairies	British Columbia	All
Training	1.85	1.62	1.86	1.94	1.70	1.80
Market Information	1.87	1.31	1.54	1.43	1.57	1.53
Government Procurement	1.90	1.47	1.51	1.56	1.60	1.57
Industrial Support	1.68	1.58	1.42	1.66	1.48	1.52
R&D tax Incentives	0.91	1.46	1.14	1.30	1.10	1.19
Export Incentives	1.09	1.28	1.17	1.10	1.10	1.16

and market-information services do. In Quebec, R&D tax incentives moves up the list and training moves down relative to the national total. Ontario, the Prairies, and British Columbia reflect the national rankings.

Turning to compare the scores across regions for individual policies, it is evident that training receives the lowest value in Quebec. Market information receives the highest score in the Atlantic region and the lowest in Quebec. Procurement receives the highest score in the Atlantic. R&D receives the lowest score from Atlantic firms, but the highest from Quebec firms. Export incentives receive the highest score from Quebec.

3.6 An Overview of Small-Firm Strategies and Activities

The profile presented in this section is derived from the self-assessed importance given by GSMEs to certain strategies and associated activities. It shows that their self-perceived strengths are diverse.

GSMEs see themselves as possessing strengths traditionally attributed to small firms: flexibility of response to customer needs, quality of product, and customer service. Nevertheless, these are not the only areas of competence to which they attribute their excellence. Management skills are singled out for much of the credit. Strategies to improve management practices are targeted towards a comprehensive system approach. GSMEs have a management strategy that stresses total quality management and, where applicable, process and just-in-time inventory control.

Marketing also plays a central role in GSMEs. Marketing is ranked second to management in explaining success. GSMEs rank themselves above the competition with regards to quality of product, flexibility in responding to customer needs, and customer service. Marketing expenditures account for about 22% of total investment.

In addition, GSMEs place a high value on solving the problem of capital cost and access to capital. The cost of capital and access to capital are both regarded as important explanations of the success of GSMEs. They utilize relatively more long-term capital than short-term capital, more equity than debt, and retained earnings in turn accounts for the majority of shareholders' equity.

While the traditional areas such as management, marketing, and finance generally receive much of the credit for GSMEs' success, the skills of their work force are not ignored. The quality of the labour force is a priority for GSMEs. They are conscious of the need for a highly skilled work force and rank the skill levels of their employees as being superior to their competitors. Their human-resource strategy focuses on continuous staff training. The average share of investment expenditures for staff training of GSMEs is some 10%. Some 53% of firms give their employees training.

It is more difficult to gauge the importance that GSMEs attach to innovative activity. Nevertheless, their answers to a range of questions indicate that they are innovative in a broad sense. While 16% of investments go into R&D, on average, and R&D-to-sales ratios are healthy relative to those of the population of business firms, these R&D-based data underestimate the innovative capacity of GSMEs. A larger proportion of GSMEs attribute success to R&D strategy (33%) than report R&D expenditure (12%). An even larger proportion (55%) report that they introduced an innovation—though only a small number of these innovations come from a formal R&D unit. A substantial proportion regard the introduction of new products or entering new markets as crucial. Developmental strategies in both the area of marketing and technology demonstrate that a substantial portion of GSMEs have adopted an aggressive strategy involving new products and technologies. A large number focus their marketing

efforts on introducing new products and/or penetrating new markets. In the area of technology, many are adopting new technology, refining it, or developing their own new technology. In the area of production strategies, a large proportion are turning to new materials for cost savings.

GSME innovation comes from both outside and inside the firm, though these firms are generally outward-oriented in terms of the importance attributed to the different sources of innovation. Important outside sources are customers and suppliers; inside sources are management, marketing, and the production department. Innovation strategy does not focus exclusively or even mainly on R&D strategy, which receives a low ranking as an explanatory factor behind growth. Instead, technology strategy is given more emphasis.

Finally, GSMEs believe that government programs contribute less to their success than do the standard areas of management, marketing, finance, employee skills, or technological capacity. Indeed, government aid is viewed as important by only a small portion of GSMEs. The programs that are valued most by the largest number of firms are the ones with clear externalities—training and market-information services.

4. Performance and Firm Strategy

Industrial strategy is organized around the support governments offer to innovation, training programs, and financing, as well as a number of other particular policies—from export incentives, to market-information services, and government procurement. Decisions about the public resources that should be allocated to the various programs require answers to questions such as: Are innovative strategies important? How important are they relative to other programs? Do training programs contribute to success? If so, do the most-successful firms train many workers? How important is capital structure in facilitating growth? What is the relative importance of each? These questions can be answered in two quite different ways.

The first section of this study provides a broad overview of the strategies and the activities of growing small- and medium-sized firms. The overview evaluates the importance of innovation, training activities, capital structure, and the general use of government programs—all areas of major policy initiatives. This is done by setting each of these in a broader context by comparing the importance that successful firms attach to them and many of the other problems that these firms must master (management, marketing, capital cost, quality, price, and breadth of product line).

The sample of GSMEs was chosen in order to investigate the profile of a group of *successful* firms. Success was defined to consist of growth in employment, sales, and assets. Decline in any of the three categories over the four-year growth period of the late nineteen eighties caused a firm to be excluded. The growth criterion selected to define the sample used in this study excludes declining firms. The previous section has demonstrated that the growing firms that were chosen are broadly representative of the population of small firms as a whole with regards to occupational structure, R&D spending, and training intensity.

While the sample of all GSMEs yields a profile of non-declining firms, the picture of this group as a whole cannot be used to infer the policies and activities that lead some firms to move ahead of their competitors. The first section of this study has only described the characteristics of a class of successful firms. The object of this section is to describe the characteristics that cause some of the successful firms to move to the head of the class and others to lag behind.

To do this, the differences between the more- and the less-successful firms are investigated by tabulating the difference between the policies and activities that are followed by firms in these two groups. Alternately, a different research design could have been chosen—one using a comparison of firms that are tremendous successes with firms that are dismal failures. The latter is a strategy that has its uses in some circumstances, but not here. The purpose of this section is to distinguish between the firms that do little for growth and those that do a lot—not those that contribute to decline and those that contribute to growth. Those that contribute to decline are all too obvious. This study is focused on a distinction that is more difficult—finding the difference between the mediocre firms that also place demands upon the public purse, but whose growth prospects are only fair, and those firms that will be the winners of tomorrow, firms that will be moving to the top of their industry and becoming more profitable.

To perform this comparison, a criterion has to be chosen to separate the more-successful from the less-successful. In order to determine how strategies and activities relate to success, the GSME sample

is divided into more-successful and less-successful groups, using data on employment, sales growth, and profits for these firms between 1984 and 1988.

4.1 Measures of Success.

Success has many dimensions and, therefore, can be measured in different ways. It can be defined in terms of the percentage rate of change in size, in terms of market-share gain, or in terms of changes in profitability or productivity.

First, entrepreneurs may be defined as successful because they grow faster than others. This rapid growth could result from their being in faster growing industries or, if they are located in slower growing industries, from gaining market share. Measures of the rate of change in size can be used to capture this facet of success.

Second, entrepreneurs may be defined as successful if they do better than others that face the same industry environment. A definition of success in this case must extrapolate from industry factors that are the cause of growth and distinguish a successful firm from its competitors in the same industry. Measures of market share can be used to capture this aspect of success.

Third, entrepreneurs may neither grow rapidly nor gain market share yet still be considered successful if they have high levels of profitability or productivity, or if they improve the levels of their productivity and profitability over time. If this aspect of success is to be captured, measures of productivity and profitability can be used.

This study chooses an eclectic approach to defining success. It recognizes that more than one measure is meaningful and, therefore, uses several different indicators of success. Despite its acceptance of the possible multifaceted nature of a success measure, the study does focus on growth in market share, since the primary purpose is to investigate whether there are common factors that allow firms to move ahead of their competitors across different industries. The use of market share makes it possible to abstract from industry-specific effects that have an influence on a firm's rate of growth.

It is important, however, to recognize that market-share gain alone does not measure success. Firms that are gaining market share may not be considered successful if they become less profitable.

Other related work (Baldwin and Gorecki, 1991) suggests that gains in market share are often associated with productivity gains and, therefore, firms with market-share gains are generally successful. To ensure that this is the case, this study employs measures of productivity and profitability growth and investigates the extent to which they are associated with market-share gain. Productivity and profitability changes of a firm are measured relative to the average for the industry in which the firm is located. This removes industry-specific effects that may cause firm profitability to change.

Once the definition of success is determined, the unit in which it is measured must be chosen. Market share can be measured in terms of outputs (sales) or inputs (assets and employment). Output is clearly the most relevant criterion. Nevertheless, because of the emphasis that some place on job growth, input shares are also employed to provide a picture of the relationship between input and output growth for successful firms.

4.2 Dimensions of Success in the GSME Sample

In this study, the change in market share is measured between 1984 and 1988 in terms of sales (MSHC). The share change of inputs is measured in terms of labour (LSHC), assets (ASH), and equity (EQSHC). Changes in share of profits (PSHC) are also included in order to test whether firms that increase their share of output also increase their share of total profits. The change in two productivity ratios—sales to assets (SAC) and sales per worker (SLC)—are employed to capture capital and labour productivity, respectively. Change in profitability is measured using changes in the ratio of profits to assets (PAC), profits to equity (PEC), and profits to sales (PSC). The change in these variables between 1984 and 1988 is always measured relative to the same variables calculated for the industry. The correlation matrix for these variables is presented in Table 15.

Change in market share (MSHC) has a correlation of 0.7 with the change in capital share (ASH), but only 0.3 with the change in labour share (LSHC). Firms that increase their share of the product

Table 15
Correlation Matrix for Industry Characteristics

Industry Characteristic	LSHC	ASH	EQSHC	PSHC	MSHC	PAC	PEC	PSC	SAC	SLC
LSHC	1.00	0.21	0.11	0.04	0.33	-0.02	0.00	0.00	-0.02	-0.03
ASH	0.21	1.00	0.62	0.16	0.69	0.01	0.01	0.02	0.00	0.12
EQSHC	0.11	0.62	1.00	0.26	0.40	0.02	0.00	0.06	0.00	0.00
PSHC	0.04	0.16	0.26	1.00	0.21	0.04	0.04	0.39	0.00	0.03
MSHC	0.33	0.69	0.40	0.21	1.00	0.01	0.01	0.06	0.02	0.16
PAC	-0.02	0.01	0.02	0.04	0.01	1.00	0.33	0.07	0.97	0.02
PEC	0.00	0.01	0.00	0.04	0.01	0.33	1.00	0.02	0.32	0.02
PSC	0.00	0.02	0.06	0.39	0.06	0.07	0.02	1.00	0.04	0.04
SAC	-0.02	-0.00	0.00	0.00	0.02	0.97	0.32	0.04	1.00	0.03
SLC	-0.03	0.12	0.00	0.03	0.17	0.02	0.02	0.04	0.03	1.00

Note: Correlations have been rounded to two decimal places.

market more often than not also increase their capital share, but do not increase their labour share as frequently. Gains in market share are accompanied by changes in the capital-to-labour ratio as firms add more capital than they do labour.

In addition, there are corresponding increases in labour productivity in firms that are gaining market share. Change in market share (MSHC) is positively correlated (0.2) with the change in labour productivity (SLC). There is no correlation between the change in market share (MSHC) and the change in capital productivity (SAC).

As was hypothesized, share gain and profitability gain are related, though not perfectly so. There is a small positive correlation (0.2) between the change in market share and the change in profit share.

It is clear that measuring success with labour units alone would have several unfortunate consequences. Labour share is negatively correlated with change in the ratio of profits to assets (PAC) and the change in the ratio of sales to assets (SAC). Change in labour share is only weakly correlated with change in market share.

Correlations were also calculated, though not presented in Table 15, between the change in market share, the change in profitability over the period 1984-88, and the 1984 values of the profitability and the productivity variables relative to the industry mean. Companies that gain market share over the period studied are neither particularly productive nor particularly profitable at the beginning of the period. However, those firms that are not particularly profitable relative to the industry mean in 1984 gained profitability over the period and vice versa. For example, the change in the profits-to-assets ratio (PAC) is negatively correlated (-0.9) with the profit-to-asset ratio in 1984 (PA84). This indicates that there is reversion to the mean in firm profits. On the other hand, firms in 1984 that had higher levels of labour productivity increased their labour productivity most. The correlation between the change in labour productivity (SLC) and the sales-to-labour ratio in 1984 (SA84) is 0.5. Changes in market share and relative labour productivity are indicative of long-run trends in the relative position of the firm. Changes in relative profitability have a greater random component and are less indicative of longer-run trends in the basic health of a company.

The correlations show that there are connections between share change and the various measures of profitability, but that the relationships are not always very strong. The dimensions of success are not perfectly congruent. Profitability change can be high without gains in market share. Market-share gains are not always associated with profitability changes.

In order to investigate further the dimensionality of the different measures of success, a principal-component analysis was performed on the market-share, profitability, and productivity variables. Principal-component analysis is used to examine the extent to which the market-share and profitability variables are linearly related. This statistical technique produces a set of variables, the principal components, which are linear functions of the original variables, but are orthogonal to one another; that is, the factors that each component measures are independent of one another. The weights or the coefficients on the original variables that define the component serve to describe the factors that make up the component. For example, if market share has a large weight and profitability a small weight, the component represents the market-share effect and not the profitability effect. If market share and profitability are both weighted, then the component represents both market-share and profitability change.

Table 16 contains the weights of the original variables in each of the two most important components. The first component accounts for 30% of the variance of the sample. The second component accounts for 16%. Each of these two dominant components, which are described below, represents a readily interpretable aspect of success:

- The first component captures changes in profits. It assigns the largest weights to changes in profits-to-assets (PAC) and sales-to-assets (SAC) ratios relative to industry values over the period 1984-88.
- The second component represents situations where market share, input share, profit margins, and labour productivity all increase. It is a general share-change variable, giving higher weights to change in market share (MSHC), change in asset share (ASH), and change in equity share first, change in profit share (PSHC) second, and change in labour share (LSHC) last of all. It also positively weights the change in profits-to-sales ratios (PSC) and sales-per-worker ratios (SLC).[56]

The first and second components are used in this study to rank firms in terms of either profitability, or combined profitability and market-share success.

The first component is a pure profitability component as measured by the ratio of profits to assets. It represents situations where firms are relatively unprofitable in 1984 and gain significantly relative to the industry in which they are located during the rest of the decade. They manage to improve their profitability without necessarily expanding relative to their competitors in the same industry. When a firm scores high on the first component because of changes in its profitability, it will be said to be more profitable.

The second component is a general-success measure that represents both market-share growth, profit margin, and labour-productivity growth. When a firm scores high on this second component because of what has happened to its market share and profitability, it will be said to be among the more successful.

4.3 The Policies Associated with Success

The purpose of this study is twofold: to determine whether successful firms claim to be pursuing some strategies more intensely and whether there is evidence from their activities that they do so. In order to investigate the relationship between the policies that were being followed by small firms and their success, the sample is divided into two groups of equal size on the basis of their principal-component scores. The general-success and the profitability components are chosen for this purpose. Then the means of the scores for growth factors, for competitiveness-assessment categories, for developmental strategies, for government programs, and for innovative ideas are calculated for the less-successful and the more-successful firms, and for the less-profitable and the more-profitable firms. Statistical tests are used to examine whether there are significant differences between the two groups. The results are tabulated in Appendix III, Tables 3.6 to 3.11.[57]

Firms differ most in terms of the general-success index. There are more strategies and activities that are valued quite differently by firms in the top and bottom half of the population when the general-success component is used for ranking than when the profitability component is used for ranking. This suggests that the general-success component is more clearly related to purposive behaviour and that the profitability component is affected more by random noise—exogenous events over which a firm

Table 16
Principal Components of the Success Variables

Firm Performance Variables	General Success Component	Profitability Component
Output Share Change[1]	0.48	-0.01
Asset Share Change[1]	0.49	-0.01
Equity Share Change[1]	0.42	-0.01
Profit Share Change[1]	0.31	-0.02
Labour Share Change[1]	0.21	0.01
Profits/Assets Change[2]	-0.02	-0.45
Profits/Equity Change[2]	-0.01	-0.20
Profits/Sales Change[2]	0.30	-0.05
Sales/Assets Change[2]	-0.03	-0.44
Sales/Labour Change[2]	0.16	-0.02
Equity /Assets[3]	-0.05	0.04
Profits/Assets[3]	0.02	0.45
Profits/Equity[3]	0.02	0.39
Profits/Sales[3]	-0.26	0.05
Sales/Assets[3]	0.03	0.46
Sales/Employee[3]	-0.14	0.00

[1] Change is measured for 1984-88.

[2] Ratio changes are measured relative to the industry performance for 1984-88.

[3] The ratios are for the year 1984.

has less control. In what follows, the general-success component, therefore, receives the greatest attention.

4.3.1 Growth Factors

Almost all of the growth factors are positively related to general success; that is, the mean scores of those firms that were in the top half of the distribution are higher than those in the bottom half (see Figure 33). However, not all of these differences are statistically significant. Three policies with the greatest score differences are R&D-innovation capability, access to markets, and technological ability. Each of these differences is statistically significant at the 5% level.

Research and development may not receive a very high score, on average, from the population of all GSMEs, but the score that it receives has the greatest ability to predict whether a firm will be generally successful. The second most important predictor of success is the score that a firm gives to its ability to access markets. The third most important factor in discriminating the more-successful from the less-successful is technological ability.

All of these can be classified broadly as innovative capabilities. R&D is closely associated with the development of new products and processes. New markets often have to be penetrated in order to sell new products and, thus, the attention paid to accessing new markets differentiates firms by their innovative marketing ability. Finally, technological capability must be relied on to master the new processes that are required in the production process.

In addition to these innovative capabilities, other policies are associated with success. Government assistance, marketing, access to capital, the cost of capital, management skill, and employee skills all have higher scores for those firms that are in the top half rather than the bottom half of the successful group of firms. However, only the importance attributed to government assistance is significantly higher (at the 5% level of statistical significance) for the more-successful group of firms.

It is noteworthy that the variables receiving the highest rankings by the entire sample of GSMEs—management and labour skills—provide the least ability to discriminate between the more- and the less-successful GSMEs. Firms have to possess

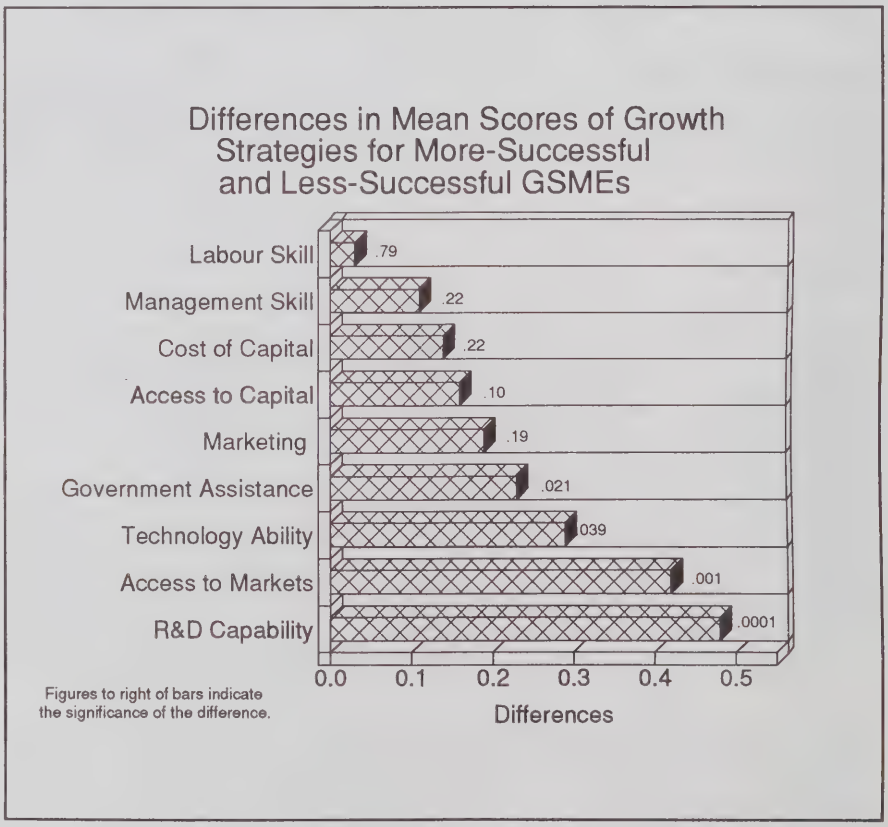


Figure 33. Differences in Growth-Factor Scores

basic management skills and a skilled labour force, but it is the addition of the innovative capabilities that serves to distinguish the more- from the less-successful.

Fewer policies discriminate between firms that are successful in terms of profits alone. This is probably because long lasting success generally involves both market-share and profitability change jointly, whereas profit-change, by itself, contains an ephemeral random element that is both quickly reversed and not related to purposive behaviour and strategic decisions adopted by the firm.

The more-profitable firms have higher scores on capital cost and access to capital (see Appendix III, Table 3.6). In addition, placing a higher score on skilled labour is associated with profitability success; however, none of these differences are statistically significant at the 5% level.

4.3.2 Competitiveness Assessment

As was the case with growth factors, the qualities that distinguish the more-successful from the less-successful firms are related to the innovation capabilities of a firm (Figure 34). Firms that are more successful generally have higher scores on R&D-innovation capability, on the frequency with which they introduce new products, and on the range of products offered. The differences in these scores are all statistically significant at the 5% level. In addition, firms that believe they are superior with respect to production costs are generally among the more-successful.

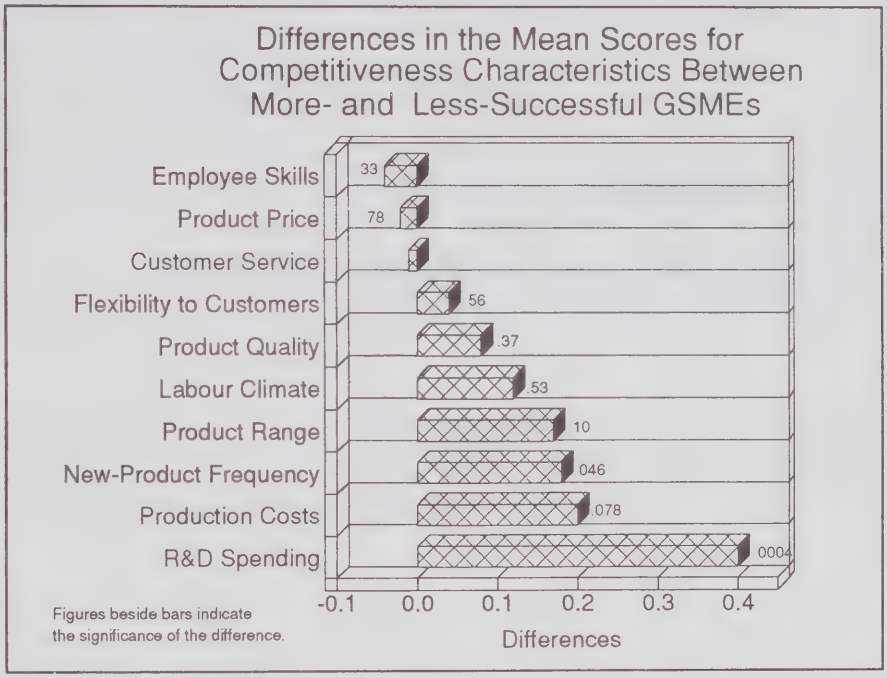


Figure 34. Difference in Competitiveness-Assessment Scores

Once again, with the exception of R&D, there are no characteristics that serve to distinguish the more-profitable from the less-profitable firms (see Appendix III, Table 3.7). As was previously the case, firms that do better on employee skills and labour climate than their competitors rank in the top half with regards to profitability, but these differences are not statistically significant at the 5% level.

4.3.3 Developmental Strategies

When developmental strategies are examined, it is evident that an aggressive innovation policy once more serves to distinguish more-successful from less-successful firms.

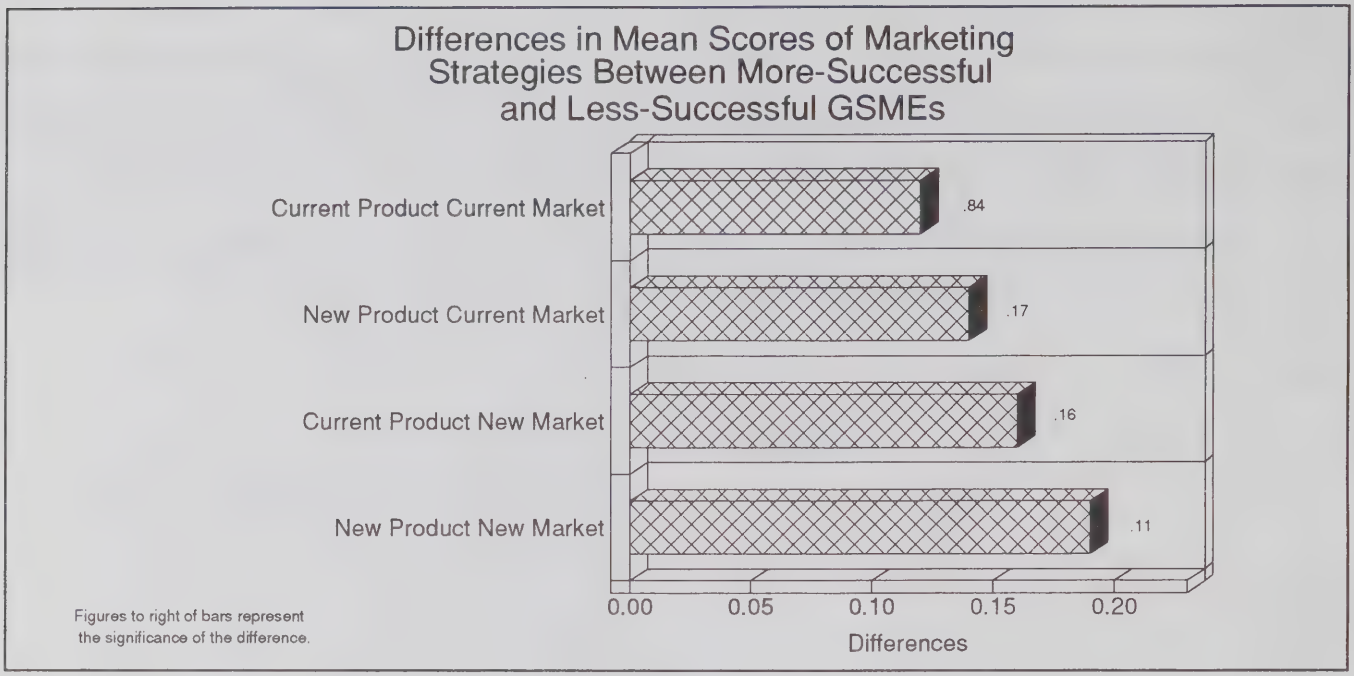


Figure 35. Difference in Marketing-Strategy Scores

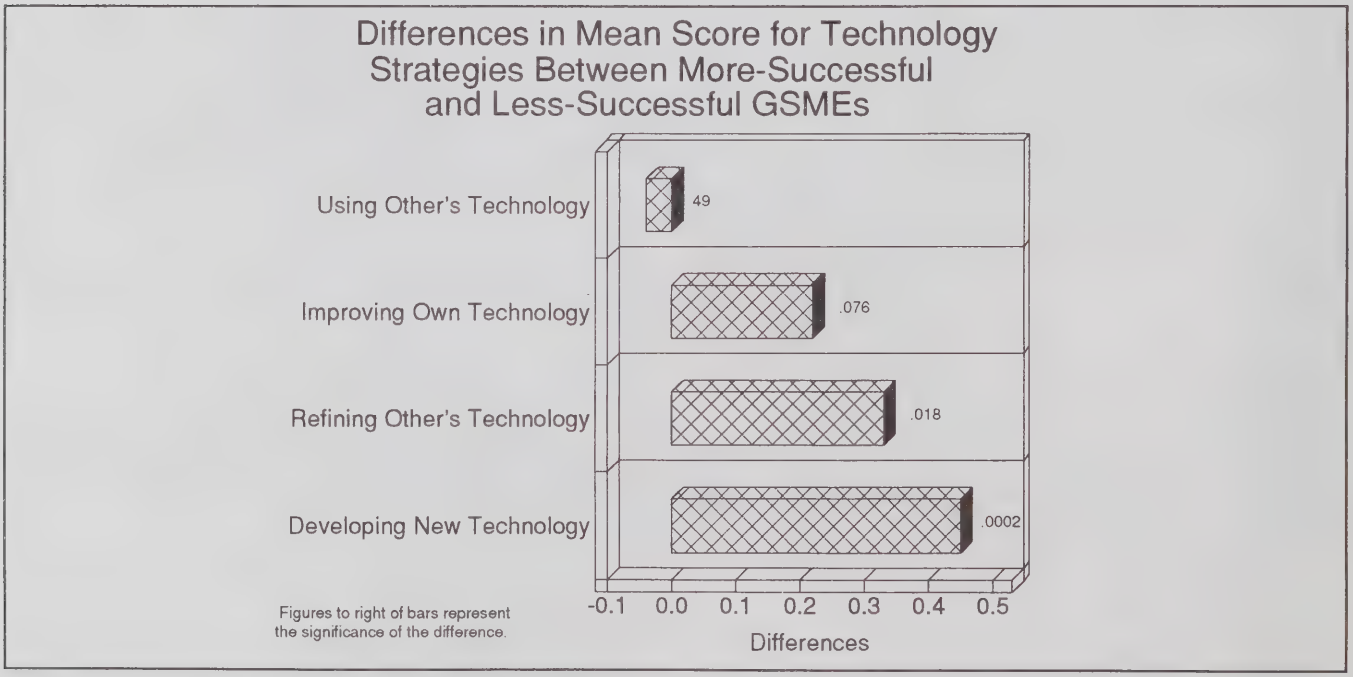


Figure 36. Difference in Technology-Strategy Scores

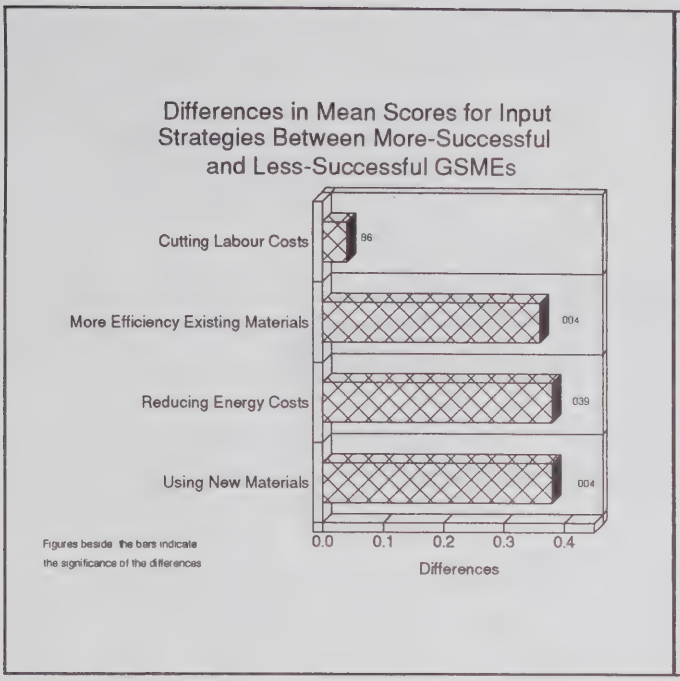


Figure 37. Difference in Input-Strategy Scores

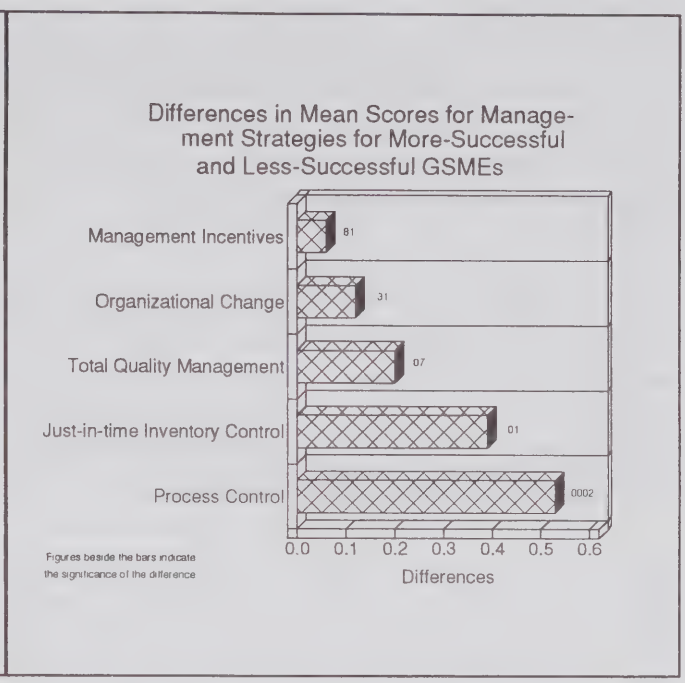


Figure 38. Difference in Management-Strategy Scores

In the marketing area (Figure 35), emphasizing new products or new markets is the strategy most strongly associated with success. A higher score on the conservative strategy of selling existing products in existing markets has the weakest relationship with success.

In the area of technology strategies (Figure 36), adopting a more aggressive strategy (developing a new technology, refining the technology of others, or improving own existing technology) is associated with success; adopting the least aggressive strategy (using the technology of others) has no significant association with success.

It is noteworthy that the differences between the technology scores for the less-successful and the more-successful groups are much greater than the differences between these two groups for the scores on the more aggressive marketing strategies. Moreover, the differences for two of the technology strategies are statistically significant at the 5% level; they are not statistically significant for the marketing strategies. Adopting innovation-related marketing strategies matters, but not as much as adopting innovation-related technology strategies.

In the area of production strategies, more-successful firms place a significantly (at the 5% level) greater emphasis on the importance they attribute to using new materials, using existing materials more efficiently, and reducing energy costs (see Figure 37). Once more the score on the labour factor (in this case, the emphasis placed on reducing labour costs) is not significantly related to success—that is, gaining market share and increasing profits-sales margins.

In the area of management practices, the importance attached to two advanced techniques (just-in-time inventory control and process control) is significantly higher for the more-successful (see Figure 38). The difference is statistically significant at the 5% level. The difference in the importance placed on total quality management is significant at the 10% level.

Finally, the only human-resource strategy whose score is much higher in the more-successful group is that involving an innovative compensation package (see Figure 39). The difference, however, is not statistically significant at the 5% level.

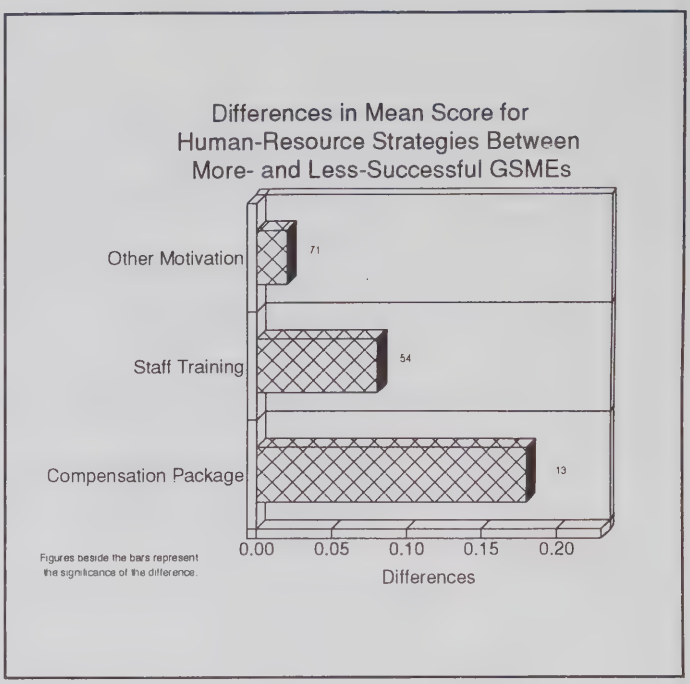


Figure 39. Difference in Human-Resource Strategy Scores

It is noteworthy that almost none of the developmental strategies is related to the profit dimension being measured, except in a negative way (see Appendix III, Table 3.8). Introducing new products into existing markets is negatively associated with profitability and the difference is statistically significant at the 5% level. Three technology strategies that gain market share also are negatively related to profitability. The difference for the most aggressive technology strategy is significant at the 10% level, which explains why there is so much emphasis in the innovation literature on the need to take a longer view of success. The only policy of note where the more-profitable firms rank a strategy much higher than the less-profitable firms is innovative organizational strategy, but the difference is not statistically significant at the 5% level.

4.3.4 Government Assistance

In the previous section, it was shown that government assistance is not valued highly by most firms. However, those firms that place a higher value on government assistance are generally the more- successful (see Figure 33).

Four of the six generic programs also receive higher scores from the more-successful firms (see Figure 40). They are export incentives, R&D tax incentives, market-information services, and industrial support. The differences found in export incentives and in R&D—both policies associated with innovation—are significantly different from zero at the 5% level.

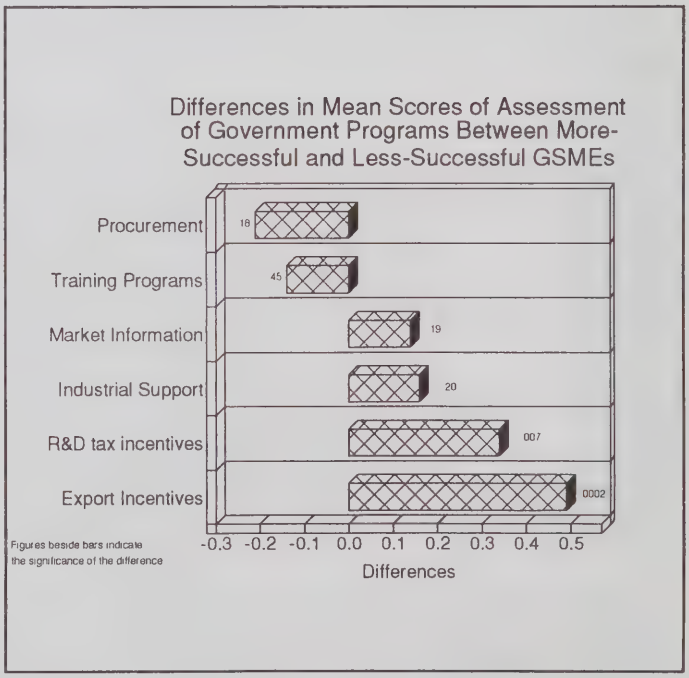


Figure 40. Difference in Government-Program Scores

The two policies that are negatively associated with success are government procurement and government training programs. Firms that rely on government sales contracts tend to be the least successful. Firms that place a higher

importance on government training programs fall into the same category as those firms that rely on government procurement. Neither of these differences is significant at the 5% level.

4.4 Activities and Success

4.4.1 R&D Activities

Innovative strategies distinguish the more- from the less-successful. This is also the case with innovative activities. The conjunction of the two findings strengthens the conclusion that innovation is the driving force behind success.

Several summary statistics related to the level of R&D activity are presented in Table 17 for the less-successful and the more-successful groups of firms as well as for the less-profitable and the more-profitable groups.

Only 6% of the less-successful firms have an R&D unit; 12.6% of the more-successful firms have such a unit. The respective percentages for those taking advantage of R&D tax incentives are 15.3 and 24.3. This indicates that a larger percentage of the R&D performers are found in the more-successful group of firms.

Table 17
Differences in R&D Characteristics Across Performance Components

R&D Characteristic	Success Component			Profitability Component		
	Less Successful	More Successful	Significance of Difference	Less Profitable	More Profitable	Significance of Difference
1. Percentage of Firms with an R&D Unit [1]	6.0	12.6	0.007	8.3	10.0	0.51
2. Percentage of Firms Using R&D Tax Credits [1]	15.3	24.3	0.029	19.7	19.6	0.97
3. R&D as a Percentage of Investment						
—All Firms [2]	12.0	21.2	0.003	14.8	19.0	0.36
—R&D Performers [3]	50.8	57.3	0.340	51.2	58.6	0.38
4. R&D as a Percentage of Sales						
— All Firms [4]	0.46	0.76	0.001	0.57	0.64	0.43
— R&D Performers [5]	6.02	5.02	0.600	5.44	5.31	0.76

[1] Test for difference in probabilities in lines 1 and 2: Wilcoxon 2-sample non-parametric test for lines 3 and 4.
[2] Unweighted mean taken for those firms reporting some form of investment.
[3] Unweighted mean, taken only for firms reporting R&D investment.
[4] Unweighted mean, taken only for firms reporting R&D investment.
[5] Unweighted mean, taken for just those firms reporting R&D investment.

It is also the case that the intensity of investment in R&D is higher in the more-successful firms. For just those firms reporting investment expenditure in one or other category, the ratio of R&D to total investment in the less-successful is 12.0%, and in the more-successful it is 21.2%. This calculation is affected by the relative incidence of non-performers, those firms doing no R&D. For just those firms that report R&D investment, the ratios are 50.8% and 57.3%, respectively. The first of these differences is statistically significant at the 5% level; the second is not. It is, therefore, evident that the incidence of R&D (whether or not it is done) differs more than the intensity of R&D activity (how much is done, if it is done) between the more- and less-successful groups of firms.

The same results pertain to the R&D-to-sales ratio. For all firms, it is 0.46% for the less-successful group and 0.76% for the more-successful group. When only R&D performers are used for the calculation, the ratio is 6.02% and 5.02%. While the first of these differences is statistically significant at the 5% level, the latter is not.

These differences indicate that successful firms are more likely to perform R&D. Success is, however, not associated with doing more rather than less R&D relative to total investment or total sales.

By way of contrast, while the R&D variables are slightly higher for those firms that are in the more-profitable group compared to those in the less-profitable group, the differences are not statistically significant at the 5% level. R&D activity then conforms to the pattern that R&D-based innovative strategies exhibited. R&D is significantly associated with the general measure of success; some aspects are related to profitability, but not significantly so.

4.4.2 Innovations

Measures of research and development expenditure provide information on only one of the inputs into the innovation process and thus only one facet of innovation. Investigating the sources of innovation provides an alternate measure. The scores for this question indicate that, while GSMEs were generally outward-oriented, when it came to developing new innovations, certain internal sources received a larger proportion of very important ratings from some firms. At issue then is the extent to which the sources of innovations differ between the more- and the less-successful. The differences in the mean scores attached to the importance of different sources of product innovations are presented in Figure 41.

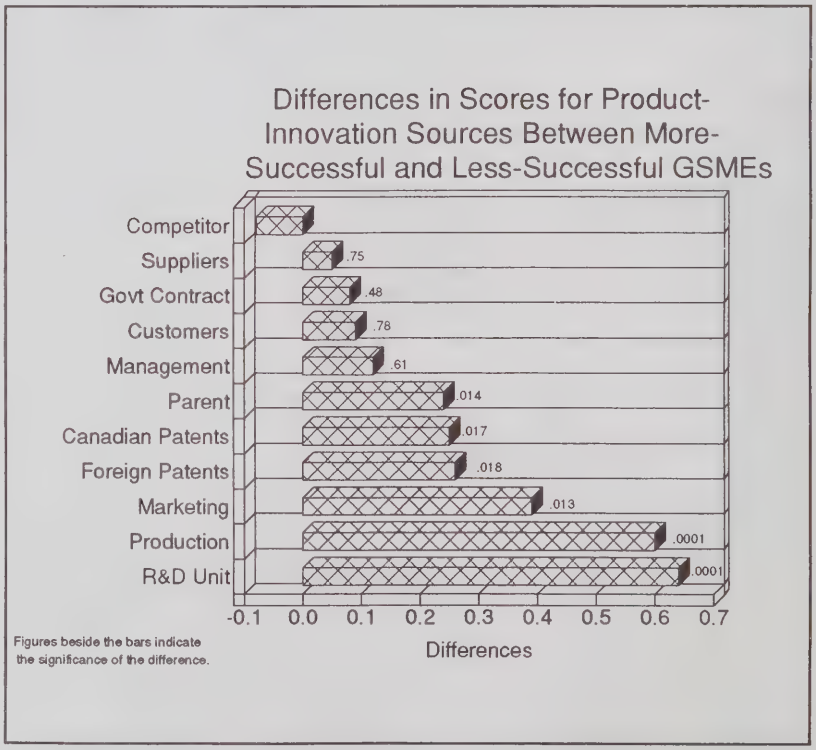


Figure 41. Differences in Product-Innovation Scores

The difference between the percentage of firms reporting an innovation in the more- and the less-successful group is not statistically significant at the 5% level. There are, however, differences in some of the sources of innovation that are statistically significant.

Firms that are more-successful place significantly greater stress on innovations originating in the production unit and the R&D unit. There is a smaller difference between the score given to the marketing unit as a source of innovation, but the difference is significantly different from zero at the 5% level. Finally, sources of innovation stemming from the parent, and from Canadian and foreign patents, also are higher for the more-successful firms and the difference is significant.

By way of contrast, firms that copy from competitors (reverse engineering) or that rely on suppliers for their innovations are generally in the less-successful group of firms. Firms that rely on management or customers or government contracts do neither better nor worse on average. Thus inward sources rather than outward sources tend to discriminate between the more-successful and the less-successful firms.

The results for process innovations are quite similar to those for product innovations (see Appendix III, Table 3.11). The one exception is that the difference in the score attached to customers as a source of process innovations is larger than for product innovations and, by way of contrast, is statistically significant at the 5% level.

In conclusion, it is the inward not the outward sources of innovation that are associated most with success. GSMEs may indicate that, on average, outward sources and management are the most important sources of innovation; however, the more-successful firms tend to rely more on internal sources like the R&D and production departments than do the less-successful firms.

4.4.3 Marketing and Export Activities

The innovative strategies that differentiate the more-successful from the less-successful also include marketing strategies that aggressively focus on new markets. One such marketing strategy is to seek new markets by exporting. Export markets are commonly regarded as requiring more initiative, but whose penetration is associated with success.

This section investigates the extent to which the innovation-related marketing strategy of exporting and the innovation-driven product strategy represented by R&D investment are related in the manufacturing sector, since this industry accounts for the majority of exports. The relationship between R&D and export intensity is investigated by tabulating the innovative characteristics for those manufacturing firms reporting only Canadian sales and for those exporting.

Table 18 reports the means for the two classes and tests of significance for the differences. The mean score on R&D-innovation capability as a factor contributing to growth is 1.59 for those only selling domestically and 2.48 for those exporting; the mean scores on technological capability are 2.48 and 3.04, respectively, for the same two groups. Both differences are statistically significant at the 5% level. This indicates that exporters place considerably more importance on both R&D and innovation strategies than non-exporters.

Further evidence on the importance of technology is provided by the differences in the mean scores of the technology strategies for exporters and non-exporters. For "developing new technology" and

"improving own existing technology", scores are significantly higher at the 5% level for exporters. Only for the least aggressive strategy—"using technology developed by others"—is the difference small and statistically insignificant.

Table 18

Differences in the Innovativeness of Exporters in Manufacturing

Innovativeness Characteristic	Domestic Sales Only[1]	Exporters[1]	Significance Level of Difference[2]
1. Mean Score for R&D Innovation Capability as a Contribution to Change[3]	1.59	2.48	0.0001
2. Mean Score for Technological Capability as a Contribution to Growth[3]	2.48	3.04	0.002
3. Mean Score for Technology Strategy[3]			
Developing New Technology	2.49	3.03	0.002
Further Refining Technology of Others	2.35	2.65	0.12
Using Technology of Others	2.77	2.81	0.78
Improving Own Existing Technology	3.31	3.60	0.03
4. R&D/Sales Ratio			
All Firms	0.3	2.4	0.0001
R&D Performers	2.6	7.6	0.003
5. R&D Employment/Total Employment			
All Firms	0.6	3.6	0.0001
Firms with R&D Units	6.9	13.6	0.02
6. Percentage Investment for Product Innovations			
All Firms	13.3	23.4	0.003
All Firms with Investment	51.4	51.7	0.84
7. Percentage Investment for Process Innovations			
All Firms	4.4	5.3	0.057
All R&D Performers	31.9	21.5	0.37

[1] The averages in this table are all calculated as unweighted means.

[2] Wilcoxon 2-sample non-parametric test.

[3] The comprehensive sample for the question from which this category is taken is used to calculate the mean for this category.

It is also the case that innovative activities differ between exporters and non-exporters. These differences generally exist whether all firms, both those performing R&D and those not doing so, or just R&D performers are used. In the first case, differentials across the export and non-exporting classes are caused both by differences in the existence of an R&D activity and by differences in the intensity of R&D effort. In the second case, they are just the result of differences in the intensity of effort of the R&D performers across the two groups.

Activities in Table 18 are measured by the R&D-to-sales ratio, the R&D-to-employment ratio, the percentage of investment in product R&D, and the percentage of investment in process R&D. There are large and statistically significant differences between the exporters and non-exporters in all categories. First, the percentage of total staff in R&D units is significantly higher in exporters than in non-exporters. It is 3.6% versus 0.6%, respectively, when all firms are considered; 13.6% and 6.9% when only those firms with employment in an R&D unit are considered. Second, the R&D-to-sales ratio is also significantly higher for exporters. For all firms, the ratios are 2.4% in exporters and 0.3% in non-exporters. For just those firms performing R&D, it is 7.6% in exporters and 2.6% in non-exporters. Third, the percentage of investment in product-related R&D is significantly higher. For those firms that report any form of investment, the mean proportion of investment devoted to product innovation is 23.4% for exporters and 13.3% for non-exporters. For those firms reporting R&D investment, it is 51.7% for exporters and 51.4% for non-exporters. Exporters also devote a greater percentage of total investment to process innovations. When all firms are considered, exporters invest 5.3% in process innovations, while non-exporters invest 4.4%. It is, therefore, evident that the more- and less-successful firms differ primarily in terms of the existence of research units. In addition, there is also a difference in terms of the intensity of the research effort, at least in terms of R&D-to-sales ratios and R&D-to-employment ratios.

In conclusion, while marketing and product strategies that are associated with innovation have each been found to be associated with success, they are not operating independently of one another. New products and processes result from innovation and in turn are associated with greater export penetration.

4.4.4 Training Activities

The average scores attached to the importance given to employee skills are not generally different for the more-successful and the less-successful groups of firms; they are slightly higher in the more-profitable than the less-profitable, although the differences are not significant at the 5% level. The scores on the importance attached to training activity follow the same pattern. It is not surprising, therefore, that training activity is not closely related to success.

Table 19 presents data on the percentage of firms engaged in training, the proportion of their employees trained and expenditures on training. The differences between the proportion of firms reporting training in the more- and less-successful groups are not statistically significant. The more-successful are more likely to provide formal training, but less likely to do informal training. There is a slight tendency for the more-successful to train fewer workers than do the less-successful, but the differences are not significant.[58] Firms that are more-successful are being more selective in who is being trained. This is borne out by the difference in training expenditure per employee trained. Less is being spent per employee trained by the more-successful firms. Less is being spent per dollar of sales by those spending funds on training. The latter two differences are statistically significant at the 12% and 9% level, respectively.

In summary, the more-successful firms have about the same number that perform training, they train about the same proportion of their employees, but they spend less on each employee trained than the less-successful. Thus the intensity of training is not closely related to success. It is likely that training matters, but that the quality of training is the deciding factor. Studies that look just at the percentage of workers trained, or the expenditure per employee, and evaluate success by assuming that both should be higher, use the wrong criteria.

The differences in the proportion of firms in the more- and less-profitable groups doing training are not statistically significant, though both the proportion of employees trained and the expenditure per employee on training are negatively correlated with profitability. Training expenditure per employee also has a negative association with profitability and the difference is statistically significant at the 5% level. So too does the training expenditure per dollar of sales for those firms reporting such expenditures, and the difference is statistically significant at the 5% level. The proportion of employees trained and the expenditure per employee trained are, therefore, poor metrics by which to judge the adequacy of training programs.

4.4.5 Financing Activities

The importance that GSMEs attribute to solving the capital-cost problem in explaining their growth lies between the levels of importance attached to technological capability and to employee skills. In addition, there are few differences that are statistically significant between the more-successful and the less-successful in terms of the importance attributed to either the cost of capital or access to capital.

Earlier, it was demonstrated that GSMEs rely heavily on retained earnings. Larger firms in the sample, however, rely less on retained earnings and more on paid-in-capital and long-term debt. This observation may reflect just cross-sectional differences at a point in time, or it may reflect basic differences related to success. Comparisons of the capital structure of the less-successful to the more-successful and the less-profitable to the more-profitable help to sort out the causal relationship. These comparisons are provided in Table 20 where the distributions of liabilities and shareholders' equity as well as the distribution for the sources of funds are provided.

The more-successful firms have a smaller percentage of their liabilities and shareholders' equity in retained earnings, and the difference is significant at the 5% level. Retained earnings make up a significantly smaller percentage of all funds in the more-successful group. This difference is offset by larger percentages being accounted for by parent firms, individuals, equity markets, and venture-capital funds.

The same differences found for the more-successful and the less-successful firms can also be found between the more- and the less-profitable firms. Retained earnings make up a significantly smaller percentage of all sources of funds for the more-profitable group. Substitutions into other sources occur sufficiently widely that few of the other differences, while positive, are statistically significant at the 5% level.

In conclusion, improvements in market share and profitability are associated with reductions in the extent to which GSMEs have to rely on retained earnings. Reliance on retained earnings is not sufficient to finance the rates of growth associated with market-share gain or to produce improvements in profitability. Moving to alternate sources of funds is associated with success.

Table 19

Differences in Training Characteristics Across Performance Groups

Training Characteristic	Success Component			Profitability Component		
	Less Successul	More Successful	Significance Level of Difference[1]	Less Profitable	More Profitable	Significance Level of Difference[1]
1. Percentage of Firms Doing Training	52.6	54.2	0.74	53.5	53.3	0.98
2. Percentage of Firms Doing Formal Training	37.6	39.7	0.79	39.2	38.0	0.85
3. Percentage of Firms Doing Informal Training	36.9	34.1	0.85	37.2	33.9	0.64
4. Percentage of Employees Receiving Formal Training in Performers						
Weighted mean, sample one[2]	27.6	23.9		30.0	23.2	
Unweighted mean, sample one[2]	26.7	26.4	0.44	28.9	24.3	0.13
Unweighted mean, sample two[3]	21.6	19.3	0.17	21.3	19.2	0.14
5. Percentage of Employees Receiving Informal Training in Performers						
Weighted mean, sample one[2]	44.2	41.0		46.1	38.8	
Unweighted mean, sample one[2]	33.4	30.3	0.19	33.3	30.4	0.53
Unweighted mean, sample two[3]	32.0	24.2	0.13	31.3	23.8	0.16
6. Training Expenditures per employee	719	652	0.12	889	483	.001
7. Training Expenditures per dollar of sales						
All Firms	0.35	0.55	0.82	0.81	0.41	0.14
Firms doing Training	0.81	0.63	0.09	0.97	0.46	.003

[1]Tests for differences in probabilities arising from binomial data in lines 1 to 3; Wilcoxin 2-sample non parametric test for lines 4 to 7.

[2] This sample consists of those firms reporting some form of training in question 8c of the questionnaire.

[3] This sample consists of those firms reporting some form of training in question 8c and training expenditures from question 8a.

4.5 Industry Differences

Two extensions were used to explore the robustness of the findings reported in this section as to which factors serve best to discriminate between the more- and the less-successful firms. The first extension used multivariate analysis to investigate whether the previous results still hold when all variables are considered together. The second analysis examined differences within each industry to explore the extent to which the overall results vary across industries.

In the previous analysis, all firms were divided into two equal-sized groups based on their overall success score. In both extensions, firms were divided into two equal-sized groups for *each* industry—based on their scores on the profitability and the general-success component. The first approach corrects for industry effects by using the relative market-share and profitability variables, but allows some industries to be represented more highly in the more-successful sample because all firms are treated equally. The extensions eliminate this possibility by dividing each industry equally into two halves.

In the first extension, multivariate analysis is used to regress a binary dependent variable, representing success, on a set of explanatory variables. The binary variable takes on a value of 0 when the firm is in the less-successful category and 1 if it is in the more-successful category. The explanatory variables represent sets of strategies and activities—innovation, human resources, marketing, financing.[59] The regression also included regional and industry fixed-effect variables. The results confirm the previous analysis. Innovation is the explanatory factor that dominates the others. However, while training is not related to success in general, more-innovative firms tend to do more training than less-innovative firms. This suggests that the context in which training is done matters. In specific highly innovative situations, training is a complement to technological capability.

The second extension tabulates differences in individual answers for firms within each industry[60] and investigates the significance of the differences. Once again, the scores attached to innovation strategies are generally higher for the more-successful firms; but the particular strategy where this difference is statistically significant is not the same for every industry. For manufacturing, the more-successful firms scored higher for R&D-innovation capability and for the emphasis placed on the development of new technologies. The more-successful firms in business services placed a significantly greater importance on technological capability as a growth factor, improvement of own technology as a technical-development strategy, total quality management as a management-development strategy, and the use of both new and existing materials as an input-development strategy. The more- and less-successful firms in the construction sector significantly differ on the stress placed on improvements in own technology. The retail sector differs because of the stress on access to new markets. The primary sector differs most in its emphasis on further refining the technology of others.

The industry-level analysis also demonstrates that, in categories where there are no statistically significant differences when firms from all sectors are considered together, significant differences emerge in some sectors when examined alone. In particular, management does not receive scores from more-successful firms that are statistically different from those of less-successful firms when all industries are considered together. But when individual industries are examined, the more-successful manufacturers give higher scores to management. In the business-service sector, there are significantly higher mean scores given to skilled labour, the human-resource strategy of continuous staff training, marketing capability, the cost of capital, and access to capital by the more-successful firms. In the

Table 20

Differences in Financial Structure Across Performance Groups

	Success Component			Profitability Component		
	Less Successul	More Successful	Significance Level of Difference[1]	Less Profitable	More Profitable	Significance Level of Difference[1]
LIABLITIES AND SHAREHOLDERS' EQUITY						
1. Short-term Debt	14.8	16.0	0.44	14.5	16.3	0.10
2. Accounts Payable	25.4	22.6	0.17	24.2	23.8	0.93
3. Long-term Debt	15.5	19.5	0.001	17.0	17.8	0.27
4. Paid-in-capital	4.4	6.6	0.004	5.0	5.9	0.001
5. Retained Earnings	35.0	28.5	0.002	33.6	30.1	0.26
6. Deferred Taxes	1.4	2.0	0.002	1.8	1.6	0.47
7. Other	3.5	4.8	0.39	3.9	4.4	0.99
SOURCES OF FUNDS						
1. Suppliers	24.3	23.9	0.93	24.1	24.2	0.83
2. Financial Institutions	27.6	29.1	0.12	27.9	28.7	0.51
3. Venture-Capital Firms	0.4	0.8	0.25	0.5	0.6	0.56
4. Public Equity	0.4	0.6	0.17	0.6	0.4	0.70
5. Government	0.9	1.3	0.20	1.3	0.8	0.69
6. Individuals	4.6	6.0	0.67	4.6	6.0	0.34
7. Parent of Affiliates	3.9	5.8	0.16	4.1	5.6	0.08
8. Retained Earnings	32.6	26.9	0.003	32.1	27.4	0.02
9. Deferred Taxes	1.3	1.7	0.04	1.6	1.4	0.51
10. Other	3.8	4.1	0.99	3.2	4.7	0.74

[1] Wilcoxon 2-sample non-parametric test.

wholesale sector, the average score given to management and to the human-resource strategy of innovative compensation packages is higher in more-successful firms. In the retail sector, there are differences in the importance attributed to solving the cost-of-capital problem, utilizing skilled labour, using the technology of others, and implementing innovative organizational structures. In the primary sector, access to capital, cutting labour costs, just-in-time inventory control, and innovative compensation packages receive significantly higher scores in the more-successful category. The construction

sector is unique in that the more-successful firms rank themselves behind their competitors with regards to labour climate. They also place a significantly lower score on government training programs.

When firms in all industries are considered together, the difference in the mean scores of the more-successful and the less-successful firms for the marketing strategies most closely related with innovation is not statistically different. Yet the more-successful firms in business services, in the primary sector, and in the dynamic-service sector (finance, transportation, and communications) give a significantly higher mean score to marketing strategies that stress the introduction of new products in new markets and in current markets. The more-successful firms in the retail sector attach a significantly higher mean score to the strategy of introducing new products in new markets and existing products in new markets.

Like the marketing strategies, scores on human-resources strategies do not have significant differences in the overall sample between the more-successful and less-successful groups. Yet the more-successful firms in business, dynamic, and traditional services (accommodation and food services, real estate) place a greater stress on continuous staff training. Innovative compensation packages receive greater emphasis by firms in the primary, wholesale, and dynamic-service sector.

Finally, the extent to which government services receive higher scores from the more-successful firms differs substantially across industries. In each case, the difference revealed from an examination of the sample of firms as a whole was also found in the majority of the individual industries that were examined. However, there were usually one or two industries where the difference in score given to government programs by the more- and less-successful firms was much more significant than for other industries.

The more-successful firms in manufacturing, business services, retail, and primary industries all place a higher value on R&D as a growth factor; the difference for firms in the primary sector is particularly high and statistically significant. The more-successful firms value export incentives more highly in manufacturing, traditional services, retail, wholesale, and business services; in the latter three, the differences are statistically significant. Market-information services have positive differences for wholesale, primary, and retail; in retailing, these differences are statistically significant. The more-successful firms place a significantly higher value on government industrial-support programs in business services and retailing. The more-successful firms in business services, manufacturing, traditional services, and construction place lower values on training and procurement; the latter two are statistically significant when taken by themselves. The more-successful firms in business services, primary industries, wholesaling, and construction place lower values on government procurement; in construction, the difference is statistically significant.

4.6 Summary of Distinguishing Traits of the More-Successful Firms

This study provides two standards to evaluate the efficacy of the strategies and activities being pursued by GSMEs. All too often surveys of firm characteristics, like research and development expenditures or training intensity, provide tabulations whose meaning is difficult to judge. Determining whether a certain level of an activity, such as R&D or training, is adequate or inadequate cannot be done without an external criterion. More of an activity is not necessarily better. Similarly, determining whether the self-evaluation of the importance of strategies contains subjective biases requires a standard against which the answers of firms can be evaluated.

There are a number of questions that constantly arise as policy-makers wrestle with decisions as to where scarce resources are best directed. Are innovative activities the key to success? Or are training activities successful in generating growth? Is the capital structure a contributing factor to success? Which government programs stimulate growth? A tabulation of the intensity of activities, as is done in section 3, cannot by itself answer these questions.

In order to address these questions, innovative strategies, training policies, capital structure, and the pattern of government programs used by the more-successful are compared to those used by the less-successful group of firms. Success is defined relative to industry norms.

The choice of this research strategy was influenced by previous work on industry dynamics (Baldwin, 1993). This work stressed that there is considerable growth in both winning and losing sectors. Some sectors may grow rapidly for a period of time and capture the attention of popular writers. Nevertheless, even in declining sectors, there are growing, innovative firms that are introducing new technology and creating new jobs. Therefore, the criterion for success that was adopted in this study was one of growth and profitability change corrected for industry differences in these variables. For this purpose, growth is defined in terms of market-share gain and profitability in terms of change relative to industry norms.

Variations in a firm's position with regards to profitability or to its relative standing in an industry can reflect long-term trends, short-term or variable factors that reverse themselves quite quickly, or be a mix of the two. Strategies should be only loosely related to a firm's profitability, or to its gain in market share, if most of the change in both of these variables results from random events over which the firm has little control. The results of this survey show that the strategies being followed have much less relationship to a firm's relative profit position than to its relative market share. This suggests that profitability, as measured by the return on assets, has a substantial random component and that there is a large amount of regression to the mean in profit numbers. This has also been found in related research (Baldwin, 1994). Long-term changes in market share are, however, less ephemeral, though they too contain a transitory element.

4.6.1 Innovative Strategies and Activities

Innovation is the most important determinant of success. Almost all of the strategy questions that relate to innovation receive higher scores from the more-successful group of firms than from the less-successful group of firms. This is also the case for innovative activities. Whether a firm possesses an R&D unit, its expenditure on R&D relative to total investment, and its R&D-to-sales ratio are all related to success.

Differences in both the scores attached to strategies and the intensity of activities are not statistically significant in the entire sample in most other areas—management, employee skills, quality of product, flexibility of operations. Thus, the common thread for all industries that emerges from this survey is that the ability of a firm to grow relative to its immediate competitors and to increase its profitability relative to the industry mean reflects policy choices, primarily, but not exclusively, in areas that reflect innovation. In individual industries, the exact nature of the innovative activity varies and in some industries, differences emerge in other areas like human-resource strategies; nevertheless, it is innovation that is found everywhere to discriminate between the more- and less-successful groups of firms. This is not the case for the other strategies and activities.

Firms have to solve a number of problems to stay in the race that exists in each industry, to remain sufficiently competitive that they do not fail. Doing well in management and other areas that receive high scores from all GSMEs is a necessary condition for being successful. It is not a sufficient condition for winning. Solving a key set of problems provides the impetus that pushes some firms ahead and allows them to win the competitive race rather than just to finish in the middle of the pack.

The general strategies where scores are significantly higher for the more-successful than for the less-successful firms across a wide range of industries are: R&D capability, in particular pursuing an R&D research agenda; accessing new markets, in particular export markets; the frequency with which new products are introduced; technological capability, in particular, obtaining new technology, either by developing new technology, refining the technology of others, or improving own technology; controlling production costs, in particular by using new materials, reducing energy costs, and using existing materials more efficiently; and finally by making use of government programs, in particular those providing R&D and export assistance.

These results corroborate the finding of Lefebvre and Lefebvre (1992) for Quebec firms that more competitive firms, those focusing on quality, diversity, or costs tend to be more innovative. They also closely parallel the results of a recent U.K. investigation (Wynarczyk, Watson, Storey, Short, and Keasey, 1993) that compared two groups of small firms for differences in basic areas of functional expertise in marketing, management, financing, and R&D.

The U.K. study focused on a group of very successful firms and compared them to a matched set. The focus group consisted of small firms that had reached a listing stage on a junior stock market within ten years of start-up. The second was a set of firms matched to the first based on industry, location, age, and independence at start-up. The set of matched firms performed considerably better than a set of randomly chosen firms. In total, 49 companies were included in the sample for a set of intensive interviews.

The U.K. study found that both the more- and less-successful sets of firms ranked management, marketing, and financing as areas in which they had high levels of expertise. This observation is comparable to the finding of this study that management, marketing, and financing receive some of the highest scores as an explanation for growth. In both studies, research and development received a considerable lower score than these basic functional areas. Similar to the findings of this survey, the U.K. study reported that, notwithstanding the self-assessed importance given to the basic management function, there was no significant difference in the scores attached to expertise in management between the more- and the less-successful firms; however, like the Canadian survey, the U.K. study found that there is a large and highly significant difference attached to the R&D function. It also found that there is a smaller difference attached to the financing function, which is also significant. Thus both studies find that basic innovation traits differ significantly and dominate the other functional areas—with the possible exception of finance.

4.6.2 Employee Skills, Training Activity, and Success

In contrast to innovation related matters, labour issues play less of a role in discriminating between the more-successful and the less-successful across a wide range of industries. Also, they do not discriminate generally between the more-profitable and the less-profitable.

It is true that there are differences in training activities between the more- and less-successful groups of firms, but in a fashion that was not originally predicted. Higher expenditures per employee are negatively associated with growth in market share and profitability. These differences suggest that success is not associated with training alone.

The U.K. study (Wynarczyk, Watson, Storey, Short, and Keasey, 1993) also carefully examined the nature of the managerial labour markets and the efficacy of training programs. It concluded that the basic functioning of labour markets works to reduce the need and effectiveness of training programs in the more-successful firms. These firms are also more likely to hire from outside than the less-successful firms. The former tend to increase expertise via the recruitment of experienced outsiders, whereas the matched firms are more likely to develop skills internally. Although both sets of firms place equal emphasis on the need for educational qualifications, the more-successful group recruit more highly qualified skilled personnel than their matched counterparts. Frequently, the more-successful group expressed the need to employ personnel who had a knowledge of the industry and its operations, thus avoiding the need for training. The managers in more-successful firms tend to be paid more than their counterparts in matched firms. It was also the case that a significantly greater percentage of the more-successful firms provided no training at all to their first and last two managerial appointments. Moreover, previous training received by a manager was not a determinant of whether the manager was hired by a more- or less-successful firm. In addition, formal training within a firm was not related to managerial salaries. In discussing the relationship between the success of a firm and the intensity of training, the U.K. study concludes that "the nature of training is ineffective" (p. 184).

With this said, it is noteworthy that the importance given to human-resource policies does matter in some industries—notably in the service sector. It is also the case that training goes hand in hand with innovation. Across almost all industries, the firms that are more innovative give greater emphasis to human-resource policies, train more of their workers, and spend more on training.

4.6.3 Capital Structure and Success

The capital structure of GSMEs differs across firms when they are grouped according to both the general-success and the profitability measures. The more-successful and the more-profitable firms make less use of internally generated funds. This study did not try to determine if this is just the result of the normal operation of an efficient financial system or of particular problems faced by growing small firms. If internally generated funds have a high opportunity cost, growth that provides the financial system with a recognizable signal will be rewarded with less costly sources of long- and short-term debt. If there are capital-rationing problems, then the most-successful firms will resolve these problems by substituting less-expensive forms of capital for internally generated funds that come from retained earnings.[61]

4.6.4 Government Policy and Success

The study finds that a firm's evaluation of the importance of government programs is associated with success even though the firms in the sample, on average, attribute little importance to these programs. Differences in the ranking of R&D tax incentives between the more- and less-successful firms are found to be large and statistically significant at the 5% level—probably because such a ranking is correlated with the use of R&D, which itself matters. Of interest is the positive correlation between success and the use of traditional programs such as export incentives, market-information services, and industrial support, though only the first of these differences is significant. The more-successful firms tend to place a higher value on these programs and, therefore, utilize them more intensively than the less-successful firms. Governments do not have to pick winners under these circumstances. There is a self-selection process that leads winners to pick effective government programs.

In contrast, the score assigned to government training and procurement programs is negatively related to success. More firms have tried these programs than others, the overall ranking is as high as for market-information services, but the association with market share is exactly the opposite to that for the other programs.

The results for procurement are not surprising. The results for training, while perhaps surprising, accord with the difference that was found between the training activities of the more-successful and the less-successful groups of firms. The more-successful group of firms are not characterized by greater training intensity and, therefore, this group does not place a higher value on government training programs.

The results for training might disappoint the advocates of the importance of training. This should not be so. The results do not mean that training is counter-productive. They only indicate that the more-successful firms do no more training than the less-successful firms. It is not difficult to find an explanation for this result. Successful firms offer better terms of employment. Their growth prospects offer superior possibilities for advancement and better wages. This in turn attracts the better trained and more capable workers.

While this explanation does not deny that training may be important, it does raise one caution. There is an incentive compatibility problem that must be resolved if training is to be devolved from the public to the private sector as some have advocated. The firms that are gaining market share need to spend less on training in general because they benefit from hiring employees trained elsewhere. The firms that spend more on training are already falling behind their competitors and may not be training workers in the correct skills. Moreover, since resources are limited, governments have to be prepared to devote them to areas with the highest payoff. The results of this survey are strongly suggestive that high payoffs occur in stimulating innovative activity since it has the closest association with success and that it is primarily in innovative firms where training is associated with success.

Appendix I

The Survey Questionnaire

Small Business and Special Surveys Division

Survey of Growth Companies
April 1992

Confidential when completed

Collected under authority of Statistics Act, revised statutes of Canada, 1985, chapter S19.

Important

Please complete and return this questionnaire within 10 days of receipt

Si vous préférez recevoir ce questionnaire en français veuillez cocher la case ☐

Participation in this survey is voluntary. Your cooperation in completing the form however, is vital for Statistical information to be useful and valuable

Please correct mailing address, if required

Part A : Company Information

1. a) **Is your company controlled by a parent company?**

○ Yes ▸ (go to 1b) ○ No ▸ (go to 2)

b) **Legal name of parent company**

_____

c) **Please indicate the location of the parent company**

○ Atlantic ○ British Columbia
○ Quebec ○ U.S.A
○ Ontario ○ Other
○ Prairie

2. **Are the majority (largest single block of shares) of your company's shares owned by executives/management?**

○ Yes ○ No

3. **Has your company been involved in any of the following during the last 3 fiscal years (1989-90-91)?**

Merger and/or acquisitions	○ Yes	○ No
Strategic partnerships, joint ventures and strategic alliances	○ Yes	○ No

4. a) **Including both full-time and part-time employees, how many people are currently employed in your company in each of the occupational groups listed below?** (Please see definitions in appendix)

	Total Number	Women	Men
Executive/management			
Professionals			
Technical/production			
Sales personnel			
All other occupations			
Total number of employees			

b) **If your company has a R&D unit, please specify the number of employees in the unit.**

Number

5. a) **What were your total sales for each of the following fiscal years?**

	Dollars (omit cents)
1989	
1990	
1991	

5. b) **Please provide a percentage distribution of your total sales for 1991 fiscal year?**

	Percentage
Atlantic	
Quebec	
Ontario	
Prairie	
British Columbia	
U.S.	
Other	
Total	100%

Financing

6. a) **Please provide an outline of your firm's liabilities and shareholders equity from your 1991 financial statement.**

Liabilities and shareholders equity	Dollars (omit cents)
Short-term debt	
Accounts payable and accruals	
Long-term debt	
Capital stock (common & preferred)	
Retained earnings i.e. profits kept in the company	
Deferred taxes	
Other (please specify)	
Total	

b) **Of the total liabilities and shareholders equity listed above, please provide a percentage distribution by source of financing** (please see definitions in appendix)

Sources de financing	Percentage
Suppliers (accounts payable)	
Financial institutions	
Venture capital firms	
Public equity markets	
Governments	
Individuals, not elsewhere specified	
Parent or affiliated firm	
Retained earnings i.e. profits kept in the company	
Deferred taxes	
Other (please specify)_____	
Total	100%

	Percentage
c) **Percent of financing from foreign sources**	

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Investment, R&D and Innovation

7. a) What were your firm's total investments, including R&D and market development expenditures, for the following fiscal years (please see definitions in appendix)?

	Dollars (omit cents)
1989	
1990	
1991	

b) Please provide the percentage breakdown of the total investment for each of the following fiscal years.

	Percentage		
	1989	1990	1991
Market development			
R-D for Product innovation			
R-D for Process innovation			
Buildings for production			
Machinery and equipment for production			
Staff training			
Other			
Total	100%	100%	100%

Training

8. a) What were your total annual expenditures on staff training for the 1991 fiscal year (formal and informal) (see appendix for definition of training)?

Dollars (omit cents)

b) What percentage of the total payroll does the above amount represent (please check the appropriate range)?

- Less than 1% ○
- 1% - 3.9% ○
- 4% - 6.9% ○
- 7% - 9.9% ○
- 10% or over ○

c) How many of your employees (both part-time and full-time) in each occupation group received any training for the 1991 fiscal year (see definitions in appendix)?

	Formal	Informal
Executive/management		
Professional		
Technical/production		
Sales personnel		
All other occupations		

Part B: Competitiveness Assessment

9. Please assess your firm's competitive position in relation to your main competitors by using a scale 0 to 5 for each of the elements listed below.

0 - Not applicable *2 - Somewhat worse* *4 - Somewhat better*
1 - Much worse *3 - About the same* *5 - Much better*

- Price of products (goods and services)
- Quality of products (goods and services)
- Customer services
- Range of products (goods and services)
- Frequency of introduction of new products (goods and services)
- Flexibility in responding to customers' needs
- Costs of production
- Spending on research and development (R&D)
- Labour climate
- Skills levels of employees

Growth Strategies

10. In your opinion what is/will be the importance of the factors listed below in explaining the growth of your company during the past three fiscal years (1989-90-91) and over the next five fiscal years?

0 - Not applicable *2 - Slightly important* *4 - Very important*
1 - Not important *3 - Important* *5 - Crucial*

	1989 1990 1991	Next 5 years
Management skills		
R&D Innovation capability		
Ability to adopt technology		
Skilled labour		
Access to capital		
Cost of capital		
Government assistance		
Marketing capability		
Access to markets		

General Development Strategies

11. Please specify your firm's general development strategy by indicating the importance of the selected development options listed below.

0 - Not applicable *2 - Slightly important* *4 - Very important*
1 - Not important *3 - Important* *5 - Crucial*

a) Markets and products (goods and services)
- Maintaining current production in present markets
- Introducing new products (goods and services) in present markets
- Introducing current products (goods and services) in new markets
- Introducing new products (goods and services) in new markets

b) Technology
- Developing new technology
- Further refining a technology developed by others
- Using technology developed by others
- Improving own existing technology

c) Use of production inputs
- Using new materials
- Using existing materials more efficiently
- Cutting labour costs
- Reducing energy costs

d) Management practices
- Improving management incentives through compensation schemes
- Innovative organizational structure
- Just-in-time inventory control
- Process control (see definition in appendix)
- Total quality management (see definition in appendix)

e) Human resources strategy
- Continuous staff training
- Innovative compensation package
- Staff motivation in other ways
- Others (please specify)_____

Government Programs & Strategy

12. Please rate the importance of the government programs/services listed below which your company utilized during the 1989-90-91 fiscal years?

0 - Not applicable *2 - Slightly important* *4 - Very important*
1 - Not important *3 - Important* *5 - Crucial*

Government training programs	
Government market information services	
Government export incentives and services	
Government industrial support (e.g. regional, technology and development programs)	
Government procurement (purchases of goods/services)	
Government R&D tax incentives	

Sources of Innovation

13. Please rate the importance of the sources below for both Product (goods and services) Innovation and Process Innovations in your company.
(see appendix for definition of innovation).

0 - Not applicable *2 - Slightly important* *4 - Very important*
1 - Not important *3 - Important* *5 - Crucial*

	Product (goods and services) Innovation	Process Innovation
R-D unit		
Production unit		
Marketing unit		
Management		
Parent or affiliated firms		
Canadian patents, licences, & trade marks		
Foreign patents, licences, & trade marks		
Government contracts		
Competitors		
Customers		
Suppliers		
Other (please specify) _____		

Thank you very much for your cooperation.

We welcome your comments.

Comments

Page 3

Appendix

OCCUPATIONS

Executive/Management:

Occupations which involve the development and review of firm's policy, organizing and directing the major functions of the organization.

Professional:

Occupations requiring a university degree or diploma in a specific field or discipline. Examples are science, engineering, education, health-related disciplines, commerce, economics, law and social work.

Technical/Production:

Occupations related to processing, fabricating, assembly; technicians and technologists in science, engineering and medical fields.

Sales personnel:

Occupations related to the selling and marketing of the firm's products/services.

SOURCES OF FINANCING

Accounts payable and accruals:

Short-term supplier credit.

Financial institutions:

Banks, trust companies.

Venture capital firms:

Specialist firms providing risk equity or other not fully secured capital.

Public equity markets:

For example the Toronto Stock Exchange, Vancouver Stock Exchange. Also over-the-counter markets sources should be included here.

Governments:

Includes Federal Business Development Bank, Provincial Business Development Banks, government funded innovation centres.

Individuals:

Private individual investors, not elsewhere specified.

RESEARCH AND DEVELOPMENT

Research and Development (R&D):

Research and development (R&D) is a systematic investigation carried out in the natural and engineering sciences by means of experiment or analysis to achieve a scientific or commercial advance.

Research:

Research is a original investigation undertaken on a systematic basis to gain new knowledge.

Development:

An application of research findings or other scientific knowledge for the creation of new or significantly improved products or processes. If successful, development will usually result in devices or processes which represent an improvement in the "state of the art" and are likely to be patentable.

The definition of R&D excludes the following:

Market research, sales promotion quality control, or routine analysis and testing of materials, devices or products; research in the social sciences or the humanities; prospecting, exploring or drilling for or producing minerals, petroleum or natural gas; the commercial production of a new or improved material, device or product or the commercial use of a new or improved process; style changes or routine data collection (except when integrate part of R&D).

Innovation:

Any new idea or technology that you used to improve your products (goods and services) or production process.

Investments:

Capital which will result in producing business income not investment income, ex. land purchase for building plant.

TRAINING

Formal training:

Defined as all on-the-job or off-the-job learning activities requiring registration and delivered in a classroom, seminar, lecture, conference, open-learning centre including computer-based training technologically delivered, such as audio-visual presentations.

Informal training:

Defined as all on-the-job training which does not require registration, does not have a structured plan or pre-specified curriculum, and in which both the trainer and the trainee are employees of the same firm. Must exclude orientation training for new employees.

MANAGEMENT PRACTICES

Total Quality Management:

A commitment to continuous quality improvement involving: all levels of management and employees, a clear quality policy, a well-developed strategic quality plan, and the application of principles and procedures for reaching and maintaining quality excellence.

Process Control:

A mechanism by which a production process is achieved which ensures problem-free production in an economical, timely fashion, resulting in a product totally free of non-conformance.

Appendix II

The Survey Sample

GSMEs were defined first in terms of employment growth in the 1984-88 period using the Longitudinal Employment And Payroll data base (LEAP). There were 143,990 companies that had higher employment in 1988 than 1984. This population was reduced by restricting it to companies that had less than 500 employees in 1984.

Companies that grew in terms of assets and sales were identified from the Incorporated Business File (IBF). The sample of growing firms extracted from the LEAP data base was matched with firms on the Incorporated Business File (IBF) to generate a file of companies that grew on the basis of employment, sales, and assets.[62]

Table 2.1 gives an industry and regional distribution of the sample that was used for the survey and of the responses that were received.

Table 2.1
Industry and Regional Distribution of Sample

Industry	Atlantic		Quebec		Ontario		Prairies		British Columbia		Total	
	Sent	Valid	Sent	Valid	Sent	Valid	Sent	Valid	Sent	Valid	Sent	Valid
Accommodation	11	10	8	6	23	13	4	1	11	5	57	35
Agriculture	3	2	4	2	6	3	2	0	4	3	19	10
Business Services	19	13	28	17	91	64	37	27	34	22	209	143
Communication	4	3	1	1	6	2	3	2	0	0	14	8
Construction	45	31	41	27	93	65	28	19	31	23	238	165
Education	2	2	0	0	3	3	2	2	1	1	8	8
Finance	5	2	16	10	20	12	4	5	13	8	58	37
Fishing, Trapping	7	6	1	0	2	2	0	0	10	3	20	11
Health Services	2	2	5	3	8	4	7	5	3	2	25	16
Logging, Forestry	1	0	4	3	2	1	4	2	7	3	18	9
Manufacturing	42	33	161	111	259	181	56	48	77	50	595	423
Mines, Oil Wells	3	2	3	1	4	3	10	7	3	1	23	14
Other Services	22	17	31	23	56	39	20	14	23	19	152	112
Real Estate	18	9	12	8	54	33	6	2	20	14	110	66
Retail Trade	39	30	63	44	100	71	33	25	31	18	266	188
Transport	13	11	11	5	21	14	14	12	12	7	71	49
Wholesale Trade	33	27	70	45	109	74	28	22	34	18	274	186
Total	269	200	459	306	857	584	258	193	314	197	2157	1480

Appendix III

Methodology Notes

This survey makes use of several questions that contain multiple categories. For example, within question 10 on the factors that explain growth, a firm is asked to evaluate the importance of "management skills" and "the ability to adopt technology" as well as seven other categories. Firms are asked to score responses on a scale: 0 (not applicable), 1 (not important), 2 (slightly important), 3 (important), 4 (very important), 5 (crucial).

Since there are various ways to analyze the data from responses such as these, and more than one way is used in this paper, this note explains the options available and the choices used.

A statistic that is often used to summarize responses is the average score. Three separate methods involving different samples are used in this paper to calculate this summary statistic. They produce the raw mean, the comprehensive mean, and the positive-response comprehensive mean.

The raw mean will be used to refer to the average score that is calculated for each category, using only those firms that responded positively—1 to 5—for that category. It measures the central tendency for just those firms that valued the activity. Those who attached a 0 response are omitted.

The comprehensive mean is derived by taking the sample of all firms that assigned a positive score to any one of the categories within a question—management skills or R&D capability—and then by calculating the mean using this sample. It measures the intensity of response, including those who do not value the activity at all—that is, score it as 0 (not applicable).

The purpose of calculating the average score is to rank the various categories; for example, to tell if "management skills" is scored higher than "R&D capability" and by how much. If the "not applicable" values are randomly distributed in the sample, the raw mean and the comprehensive mean will rank the categories in much the same way. If they are randomly distributed, they might be treated as random omissions on the part of the respondent and a positive value imputed.

This was not done here. The distribution of the missing values did not appear to be random. For example, there are few zeros (not applicable) for the "management skill" category and a large number of zeros for "R&D capability". The latter do not follow a random pattern. They appear to be assigned when a firm does not have an R&D unit. A zero therefore provides valid information that the category is not applicable and that the firm ranks the activity lower than 1 (not important).

Omitting these values from average scores as is done when the raw mean is calculated misses the lack of importance given to the particular category relative to other categories. For example, if a sample of some 300 firms rank management skills as 4 (very important) and only 100 of these firms rank R&D capability as 3 (important) with the other 200 answering 0 (not applicable), then the comprehensive mean yields values of 4 for "management skills" and 1 for "R&D capability". Using the raw means would yield values of 4 and 3 for each, but this mean is calculated across a different sample for each category or factor. "R&D capability" has less than half the importance of "management skills" when all answers are considered; it is ranked close behind when only answers that assign a positive value to

each are used. Since the former seems to better capture their true ranking, the comprehensive mean rather than the raw mean is emphasized in the paper. Nevertheless, both are presented in the tables to this Appendix.

There is a third sample used at places in the paper to calculate what is referred to here as a positive-response comprehensive mean. This mean is calculated across the sample of firms that answer *all* categories in a question positively—with a value of 1 to 5. In the above example, 100 of the firms answer positively to both the "management" and the "R&D capability" category and the mean would be calculated for this group.

The positive-response comprehensive mean is useful when there is uncertainty as to the metric being used by the respondents to distinguish 0 (not applicable) from 1 (not important) as opposed to the metric being used to distinguish any of the other positive counts—1 from 2, for instance. If just those firms that respond positively—1 to 5—to all categories is used as the sample, it provides a measure of relative ranking for those firms where each category is relevant. By further restricting the sample to those firms that give a positive response for *each* category, we ensure that the categories have been jointly evaluated and, therefore, we have greater certainty that the metrics being used are comparable across questions.

The positive-response comprehensive mean suffers two disadvantages. It ignores 0 values that yield valuable information. Second, the sample of firms that answer all categories positively is often too small to use since so few firms value all of the categories in a question (questions 12 and 13), or it is unrepresentative, because the non-zero responses are concentrated in one category (questions 9 and 10). When the latter occurs, the positive responses concentrate on an unrepresentative group of firms.

The positive-response comprehensive sample is used in addition to the comprehensive sample when calculating means and distributions of responses for the sections in question 11—the development strategies. A sufficiently large number of firms answer all questions in each section—management, marketing, technology, and human resources—to create a meaningful sample for this question, but not for the others.

Table 3.1
Mean Scores for Growth Factors

Factor	Comprehensive Sample		Positive Responses	
	Comprehensive Mean	Standard Error	Raw Mean	Standard Error
Management Skills	3.34	0.040	3.72	0.029
Skilled Labour	2.93	0.047	3.42	0.033
Marketing Capability	2.87	0.051	3.52	0.035
Access to Markets	2.75	0.053	3.50	0.037
Access to Capital	2.66	0.049	3.21	0.037
Cost of Capital	2.65	0.051	3.26	0.039
Ability to Adopt Technology	2.51	0.051	3.25	0.036
R&D-Innovation Capability	1.44	0.053	2.97	0.051
Government Assistance	1.37	0.049	2.52	0.053

Table 3.2
Mean Scores for Competitiveness Assessment

Characteristic	Comprehensive Sample		Positive Responses	
	Comprehensive Mean	Standard Error	Raw Mean	Standard Error
Customer Service	4.01	0.034	4.16	0.025
Flexibility to Customer Needs	3.94	0.036	4.12	0.026
Quality of Products	3.90	0.033	4.01	0.026
Employee Skills	3.49	0.036	3.72	0.025
Range of Products	3.17	0.047	3.69	0.030
Frequency of Introduction of New Products	2.64	0.053	3.52	0.034
Price of Products	3.13	0.932	3.29	0.025
Costs of Production	2.62	0.046	3.21	0.030
Labour Climate	2.60	0.052	3.48	0.031
Spending on R&D	1.45	0.051	3.11	0.041

Table 3.3
Mean Scores for Development Strategies

Strategy	Comprehensive Sample		Positive Responses	
	Comprehensive Mean	Standard Error	Raw Mean	Standard Error
Management				
Total Quality Management	3.44	0.05	3.95	0.05
Innovative Organizational Structure	2.63	0.05	3.18	0.05
Compensation for Management	2.42	0.05	3.03	0.05
Just-in-time Inventory	2.38	0.06	3.27	0.06
Process Control	2.26	0.05	3.49	0.05
Marketing				
Existing Products, Existing Markets	3.57	0.05	3.93	0.03
New Products, Existing Markets	3.10	0.05	3.60	0.04
Existing Products, New Markets	3.11	0.05	3.54	0.04
New Products, New Markets	2.70	0.05	3.35	0.04
Human Resources				
Other Staff Motivation	3.33	0.04	3.53	0.04
Continuous Training	3.13	0.04	3.34	0.04
Compensation Package	2.53	0.05	2.98	0.05

Table 3.3 (continued)
Mean Scores for Development Strategies (Continued)

Strategy	Comprehensive Sample		Positive Responses	
	Comprehensive Mean	Standard Error	Raw Mean	Standard Error
Technology				
Improving Own Technology	3.15	0.05	3.57	0.04
Using Technology Developed Elsewhere	2.84	0.05	3.04	0.05
Developing New Technology	2.38	0.06	3.13	0.05
Refining Technology of Others	2.28	0.06	3.02	0.05
Input Strategy				
Cutting Labour Costs	3.60	0.04	3.83	0.04
Greater Efficiency Existing Materials	2.78	0.06	3.52	0.04
Reducing Energy Costs	2.72	0.06	3.29	0.05
Using New Materials	2.15	0.06	2.97	0.04

Table 3.4
Mean Scores for Sources of Innovation

Source	Product Innovation		Process Innovation	
	Comprehensive Mean (Standard Error)	Raw Mean (Standard Error)	Comprehensive Mean (Standard Error)	Raw Mean (Standard Error)
Customers	3.51(0.05)	3.90(0.04)	2.78(0.07)	3.83(0.04)
Management	3.14(0.05)	3.64(0.04)	2.63(0.06)	3.68(0.04)
Suppliers	2.84(0.06)	3.40(0.04)	2.34(0.06)	3.38(0.05)
Marketing	2.43(0.06)	3.40(0.04)	1.86(0.06)	3.24(0.05)
Competitors	2.40(0.05)	3.04(0.04)	2.01(0.06)	3.05(0.05)
Production Dept.	1.82(0.06)	3.22(0.05)	1.79(0.07)	3.41(0.05)
Government Contracts	1.34(0.06)	2.90(0.06)	1.09(0.06)	2.82(0.07)
R&D Dept.	1.14(0.06)	3.16(0.07)	1.00(0.06)	3.02(0.01)
Parent or Afffiliate	0.73(0.05)	2.98(0.09)	0.63(0.05)	2.92(0.10)
Canadian Patents	0.70(0.05)	2.64(0.09)	0.56(0.04)	2.56(0.10)
Foreign Patents	0.59(0.04)	2.69(0.10)	0.48(0.04)	2.59(0.11)

Table 3.5
Mean Scores for Government Programs

Program	Comprehensive Sample		Positive Responses	
	Comprehensive Mean	Standard Error	Raw Mean	Standard Error
Market-Information Services	1.53	0.06	2.31	0.05
Training Programs	1.80	0.06	2.54	0.06
Government Procurement	1.57	0.06	2.65	0.06
Industrial Support	1.52	0.06	2.52	0.06
R&D Tax Incentives	1.19	0.06	2.65	0.09
Export Incentives	1.15	0.06	2.42	0.07

Table 3.6
Differences in Mean Scores for Growth Factors Across Performance Components

Characteristic	Success Component			Profitability Component		
	Less Successful	More Successful	Significance Level of Difference[1]	Less Profitable	More Profitable	Significance Level of Difference[1]
Management Skills	3.27	3.38	0.22	3.28	3.36	0.60
Skilled Labour	2.92	2.95	0.79	2.86	3.01	0.25
Marketing Capability	2.74	2.93	0.19	2.85	2.81	0.61
Access to Markets	2.53	2.95	0.001	2.72	2.75	0.86
Access to Capital	2.59	2.75	0.10	2.60	2.74	0.23
Cost of Capital	2.61	2.75	0.22	2.60	2.76	0.18
Ability to Adopt Technology	2.38	2.67	0.04	2.55	2.49	0.61
R&D Innovation Capability	1.15	1.63	0.001	1.41	1.36	0.77
Government Assistance	1.32	1.55	0.02	1.41	1.45	0.59

[1] Using a Wilcoxon 2-sample non-parametric test.

Table 3.7
Differences in Mean Scores for Competitiveness-Assessment Questions Across Performance Components

Characteristic	Success Component			Profitability Component		
	Less Successful	More Successful	Significance Level of Difference[1]	Less Profitable	More Profitable	Significance Level of Difference[1]
Customer Service	4.04	4.03	0.39	3.99	4.08	0.42
Flexibility to Customer Needs	3.96	4.00	0.56	3.97	3.98	0.96
Quality of Products	3.88	3.96	0.37	3.94	3.90	0.51
Employee Skills	3.51	3.47	0.33	3.43	3.55	0.20
Range of Products	3.10	3.27	0.10	3.16	3.20	0.61
Frequency of Introduction of New Products	2.59	2.77	0.05	2.66	2.69	0.63
Price of Products	3.14	3.12	0.78	3.17	3.09	0.13
Costs of Production	2.50	2.70	0.08	2.63	2.56	0.48
Labour Climate	2.59	2.71	0.53	2.56	2.74	0.13
Spending on R&D	1.21	1.61	.0004	1.40	1.40	0.96

[1] Using a Wilcoxon 2-sample non-parametric test.

Table 3.8
Differences in Mean Scores for General Development Strategies Across Performance Components

Strategy	Success Component			Profitability Component		
	Less Successful	More Successful	Significance Level of Difference[1]	Less Profitable	More Profitable	Significance Level of Difference[1]
Management						
Total Quality Management	3.31	3.51	0.075	3.39	3.43	0.84
Innovative Organizational Structure	2.57	2.69	0.31	2.54	2.72	0.12
Compensation for Management	2.40	2.46	0.81	2.38	2.47	0.36
Just-in-time Inventory	2.25	2.64	0.01	2.47	2.42	0.72
Process Control	2.02	2.55	0.0002	2.36	2.21	0.32
Marketing						
Existing Products, Existing Markets	3.53	3.65	0.84	3.59	3.59	0.69
New Products, Existing Markets	3.01	3.15	0.11	3.19	2.96	0.04
Existing Products, New Markets	3.01	3.17	0.16	3.13	3.05	0.51
New Products, New Markets	2.57	2.76	0.17	2.75	2.58	0.11
Human Resources						
Other Staff Motivation	3.31	3.33	0.71	3.27	3.38	0.36
Continuous Training	3.07	3.15	0.54	3.08	3.15	0.76
Compensation Package	2.41	2.59	0.13	2.49	2.50	0.83

[1] Using a Wilcoxon 2-sample non-parametric test.

Table 3.8 (continued)
Differences in Mean Scores for General Development Strategies Across Performance Categories

Strategy	Success Component			Profitability Component		
	Less Successful	More Successful	Significance Level of Difference1	Less Profitable	More Profitable	Significance Level of Difference[1]
Technology						
Improving Own Technology	3.01	3.23	0.08	3.20	2.10	0.18
Using Technology Developed Elsewhere	2.88	2.84	0.49	2.88	2.84	0.79
Developing New Technology	2.11	2.56	0.0002	2.47	2.21	0.06
Refining Technology of Others	2.08	2.41	0.018	2.36	2.14	0.10
Input Strategy						
Cutting Labour Costs	3.58	3.62	0.86	3.58	3.63	0.82
Greater Efficiency Existing Materials	2.57	2.93	0.04	2.72	2.79	0.74
Reducing Energy Costs	2.54	2.92	0.004	2.70	2.77	0.60
Using New Materials	1.95	2.33	0.004	2.20	2.08	0.33

[1] Using a Wilcoxon 2-sample non-parametric test.

Table 3.9
Differences in Mean Scores Attributed to Government Programs Across Performance Components

Program	Success Component			Profitability Component		
	Less Successful	More Successful	Significance Level of Difference[1]	Less Profitable	More Profitable	Significance Level of Difference[1]
Market-Information Services	1.35	1.49	0.19	1.51	1.33	0.12
Training Programs	1.87	1.33	0.45	1.76	1.83	0.45
Government Procurement	1.68	1.47	0.18	1.61	1.53	0.56
Industrial Support	1.45	1.61	0.20	1.53	1.54	0.86
R&D Tax Incentives	0.98	1.32	0.007	1.19	1.12	0.98
Export Incentives	0.90	1.39	0.001	1.17	1.13	0.94

[1] Using a Wilcoxon 2-sample non-parametric test.

Table 3.10
Differences in Mean Scores forProduct-Innovation Sources Across Performance Components

Source of Product Innovation	Success Component			Profitability Component		
	Less Successful	More Successful	Significance Level of Difference[1]	Less Profitable	More Profitable	Significance Level of Difference[1]
Customers	3.48	3.57	0.78	3.50	3.56	0.73
Management	3.04	3.16	0.61	3.11	3.09	0.87
Suppliers	2.87	2.92	0.75	2.78	3.02	0.078
Marketing	2.21	2.60	0.013	2.43	2.37	0.65
Competitors	2.46	2.38	0.57	2.38	2.46	0.50
Production	1.53	2.17	0.0001	1.74	1.96	0.10
Government Contracts	1.28	1.36	0.48	1.34	1.30	0.94
R&D Department	0.82	1.42	0.0001	1.16	1.09	0.47
Parent or Affiliate	0.58	0.82	0.014	0.68	0.75	0.34
Canadian Patents	0.53	0.78	0.017	0.63	0.68	0.66
Foreign Patents	0.46	0.70	0.018	0.54	0.61	0.35

[1] Using a Wilcoxon 2-sample non-parametric test.

Table 3.11
Differences in Mean Scores for Process-Innovation Sources Across Performance Components

Source of Process Innovation	Success Component			Profitability Component		
	Less Successful	More Successful	Significance Level of Difference[1]	Less Profitable	More Profitable	Significance Level of Difference[1]
Customers	2.67	2.95	0.09	2.78	2.83	0.70
Management	2.50	2.76	0.13	2.61	2.65	0.73
Suppliers	2.27	2.46	0.17	2.27	2.47	0.24
Marketing	1.64	2.05	0.005	1.85	1.85	0.98
Competitors	1.98	2.08	0.52	2.01	2.06	0.75
Production	1.49	2.17	0.0001	1.74	1.93	0.17
Government Contracts	1.17	1.29	0.18	1.24	1.23	0.63
R&D Department	0.64	1.33	0.0001	0.99	0.99	0.84
Parent or Affiliate	0.52	0.69	0.027	0.56	0.66	0.22
Canadian Patents	0.36	0.67	0.0005	0.47	0.56	0.29
Foreign Patents	0.34	0.61	0.0018	0.42	0.53	0.16

[1] Using a Wilcoxon 2-sample non-parametric test.

Appendix IV

Variable List

ASH—change in asset share of a firm between 1984 and 1988, defined in terms of total assets.

EQSHC—change in equity share of a firm between 1984 and 1988.

LSHC—change in labour share of a firm between 1984 and 1988, defined in terms of adjusted labour units (see Statistics Canada, 1988, for definition of labour units).

MSHC—change in market share of a firm between 1984 and 1988, defined in terms of sales.

SAC—change in the sales-to-assets ratio of a firm over the period 1984-88 relative to the change in the same ratio for the industry in which it is located.

SLC—change in the sales-per-worker ratio of a firm over the period 1984-88 relative to the change in the same ratio for the industry in which it is located.

PAC—change in the profits-to-assets ratio of a firm over the period 1984-88 relative to the change in the same ratio for the industry in which it is located.

PEC—change in the profits-to-equity ratio of a firm over the period 1984 to 1988 relative to the change in the same ratio for the industry in which it is located.

PSC—change in the profits-to-sales ratio of a firm over the period 1984-88 relative to the change in the same ratio for the industry in which it is located.

PSHC—change in share of profits of a firm between 1984 and 1988.

EA84—equity divided by assets for the firm relative to its industry mean for 1984.

PA84—profits divided by assets for a firm relative to its industry mean for 1984.

PE84—profits divided by equity for a firm relative to its industry mean for 1984.

PS84—profits divided by sales for a firm relative to its industry mean for 1984.

SA84—sales divided by assets for a firm relative to its industry mean for 1984.

SL84—sales divided by labour for a firm relative to its industry mean for 1984.

Employment data comes from the LEAP data base maintained by Business and Labour Markets Analysis Group (see Statistics Canada, 1988).

Notes

1. These shares were derived from the LEAP data base that is maintained by the Business and Labour Market Group in Statistics Canada (see Statistics Canada, 1988). The share is calculated after excluding firms in public administration, health, and education.

2. See Scherer (1992) for a summary of the literature on the Schumpeterian hypothesis that large firms are the engines of growth.

3. For examples of case studies of innovation and technical change, see Litvak and Maule (1980, 1982) and Blais and Toulouse (1992).

4. Hornaday and Wheatley (1986) examine the relationship between managerial characteristics and financial performance; Edmunds and Khoury (1986) investigate the role of exports in the growth of small firms; Barton and Matthews (1989) and Jog and Schaller (1991) look at the implications of financing; Daily and Dalton (1992) compare the financial performance of founder-managed with professionally managed small corporations; Oakey and Cooper (1988) assess the management of innovation in high-technology small firms; Bamberger (1983) investigates the role of value systems; Lefebvre et al. (1992) examine the relationship of innovation to the characteristics of the CEO; Walker and Pethy (1978) investigate financial structure.

5. Examples of more general studies of small firms can be found in Birley and Westhead (1992), Davig (1986), Ibrahim and Goodwin (1986), Sherman and Seeger (1986), Shrader, Mulford, and Blackburn (1989), Steiner and Salem (1986), Steinmetz (1969), and Wingham and Kelher (1987).

6. See D'Amboise (1991).

7. See D'Amboise (1991).

8. D'Amboise (1991, p. 136).

9. Gagnon and Papillon (1984).

10. D'Amboise (1991, pp. 143-7).

11. Van Heesch (1986).

12. Caves (1980).

13. See Porter (1991), Hambrick (1988), White (1986), Davig (1986), Galbraith and Schendel (1983), Miles and Snow (1978), Mintzberg (1972), and Steinmetz (1969),.

14. Characteristics come from questions 1, 2, 3, and 5(a) on the questionnaire.

15. These activities are covered by questions 5(b), 6, 4, 7, 13, and 8 on the questionnaire.

16. Examples of straightforward activities surveys are Statistics Canada (1989), and the Canadian Labour Market and Productivity Centre (1993).

17. See Harling (1992) for a study that compares the strategic management perspectives of successful and unsuccessful small independent farm entrepreneurs using self-assessed measures of success.

18. The employment count is the average labour unit (ALU) that is contained on the LEAP file. See Appendix IV.

19. After the tails of the distributions were removed, various growth measures were closely related. The correlation of job-growth in 1984-88 and 1978-88 was 0.87; the correlation of a firm's changes in the share of total employment in an industry, calculated at the provincial level, was 0.91.

20. The out-of-scope rate was 25%.

21. See D'Amboise (1991, p. 15).

22. About 95% of all incorporated Canadian firms are independently owned.

23. Mean values were calculated using the number of firms that assigned a positive value to at least one category of the question. Thus firms that responded to all categories with a zero were excluded from the calculation of the mean. Firms that responded with a zero to a category were included if they answered at least one of the other categories with a positive response. Thus zero values are occasionally included in calculating the means to individual questions, but only where they provide meaningful information because firms have chosen zero along with values of 1 to 5 in evaluating all the categories within one question. All missing values in this sample were assigned a value of 0, which assumes the null response meant the category was not applicable (there were few such missing values for firms that responded positively to any part of a question). The mean value so calculated will be referred to subsequently as the comprehensive mean. The methodology used to measure average scores is discussed further in Appendix III where tables of the average scores are presented.

24. The convention used throughout this study is to include the standard error of the mean in brackets after the reported mean.

25. For instance, see Ibrahim and Goodwin (1987).

26. See McDonald (1984).

27. Missing values were replaced with zero (not applicable) since failure to answer a particular strategy was often accompanied by a zero response to the associated activity in the related section of the questionnaire.

28. This statistic summarizes the mean importance of an attribute for all firms that chose to answer any part of the competitiveness-assessment question positively. See fn. 23 and Appendix III for a discussion of the significance of this approach as compared to others for summarizing average tendencies in distributions.

29. The results of taking the mean for each attribute for only those firms positively valuing that attribute—the raw mean—provides roughly the same picture with two notable exceptions (see Ap-

pendix III, Table 3.2). First, a substantial number of firms chose "not applicable" for labour climate and for R&D. When only non-zero values are averaged, the score on labour climate is closer to the mean score for employee skills. Second, the score attached to the frequency of new products increases to a level just below the average score attached to range of product line.

30. The firms that ranked their R&D capabilities make up only a third of all responses.

31. The distribution of jobs comes from the Labour Market Activities Survey done by Statistics Canada in 1990. The distribution is calculated for all jobs reported during the year.

32. Some 45% report that they devote part of their investment budget to staff training. Some 47% report the amount of expenditures on staff training.

33. Additional comparisons can be found in the Economic Council (1991), OECD (1991), and Betcherman (1992).

34. Not all training expenditures have a long-run payoff and, therefore, investment expenditures on training were less than total expenditures. Investment expenditures are about 56% of total training expenditures.

35. See D'Amboise (1991, p. 136) for a description of the problems with undercapitalization. See Canadian Federation of Independent Business (1988) and Wynant et al. (1982) for a description of the access-to-capital problem.

36. Gagnon and Papillon (1984) highlight the excessive debt coefficient of SMEs in a cross-sectional study with 1975-77 Canadian data.

37. Mayer (1990), in a survey of the sources of financing of SMEs in several industrialized countries, confirms this general tendency.

38. See Scherer (1992) for a summary of research in this area.

39. Acs and Audretsch (1990), p. 21.

40. Statistics Canada (1989).

41. Statistics Canada (1989), p. 112.

42. In comparing the employment intensities, it should be noted that the R&D total is stated in terms of full-time equivalents while the GSME survey asked for all employment—full- and part-time.

43. These are unweighted means.

44. Statistics Canada (1989).

45. For example, the weighted average R&D expenditure is calculated as the sum of R&D expenditures across all firms divided by the sum of all investment by all firms. The unweighted average is just the arithmetic mean of the ratio of R&D expenditure to investment for all plants.

46. If only those firms employing less than 500 workers are used to calculate the national average, the national R&D-to-sales ratio for 1989 is 4.7% and for 1990 is 4.9%. For the manufacturing sector, it is 2.9% and 3.0%, respectively, for the same two years. Using this standard, the GSME group has a slightly lower R&D-to-sales ratio than the population of equivalent firms in the national group. The national survey calculates R&D-to-sales ratios using current intra-mural expenditures, which excludes capital intra-mural expenditure. Total R&D investment, as used here, includes both intra-mural and extra-mural expenditures.

47. The weighted averages for the R&D-to-sales ratio for firms with and without an R&D unit are 4.7% and 7.6%, respectively.

48. The average R&D-to-sales ratio reported in Figure 14 is lower than in Table 12 because the former is taken across all firms reporting any kind of investment, including those with no R&D, while the latter includes only those reporting R&D investment.

49. This average is calculated for all firms that answer any one of the questions as to innovation source—the comprehensive sample. See Appendix III for further details.

50. The calculated average scores include all GSMEs, those that have an R&D unit and those that do not. The importance of R&D as a source of innovation is 3.63 for the SMEs with an R&D unit versus 3.17 for the whole group. The average score attributed to R&D is, therefore, somewhat higher for those firms that actually have an R&D unit.

51. For an opposite point of view, Edmunds and Khoury (1986) argue that exports are a necessary ingredient for the growth of small American business.

52. These data come from Statistics Canada (1992).

53. If a firm answered only part of the question and left a section blank, the missing value was replaced with zero for "not-applicable".

54. When averages are taken across the entire sample, they provide a measure of the relative importance of a strategy to all firms that valued any one of the strategies. However, in scoring questions such as these, it is not clear that the metric from 0 (not applicable) to 1 (not important) is the same as it is between any of the other counts, for example, between "not important" and "somewhat important". Therefore, distributions are also presented for those firms that scored each positively from 1 to 5—the positive-response comprehensive sample. The latter provides a measure of relative ranking for those firms where each category is relevant and is evaluated jointly with all the others. See Appendix III for further details.

55. The Nordic studies (Nordic Industrial Fund, 1991) used a six-point scale similar to the one used here. Figure 21 compares the percentage of firms scoring the strategy in the top two classes of the response scale.

56. Alternate success criteria related to job growth were explored. To do this, the component that most heavily weighted the job-share variable was examined. Other variables weighted in this component were market-share loss and productivity decline. In addition, an alternate measure of a firm's job creation—the Birch index—was examined. This is the rate of change in job creation weighted by the value of the job change. The component that weighted the Birch index

most heavily also contained such variables as market-share loss, productivity, and productivity loss. Thus the firms that are creating relatively more jobs are those that are not very successful either in terms of market share, productivity, or profitability.

57. The results in Appendix Tables 3.6 to 3.9 provide the mean score in the top and the bottom half of the distribution of firms based on the principal-component scores. Both two-sided t tests and Wilcoxon sign rank tests were calculated to test for differences in central tendencies of the two samples—the more- and less-profitable, the more- and less-successful. The levels of significance for the differences between the means of answers for more-successful and less successful firms that are reported in the text are the prob values associated with two-tailed tests. The Wilcoxon test is a non-parametric test that is potentially superior to the t test when non-normality exists in the responses. Since the distributions of responses is sometimes non-normal, non-parametric tests are reported in these appendix tables. The nature of our conclusions are not affected by the choice of the non-parametric test over a normal test.

58. For Table 19, two samples are chosen to define performers for calculating the percentage of workers trained. The first uses only those firms reporting training in question 8c. The second is more stringent and uses only those reporting training in question 8c and those reporting expenditures in 8a. The second is also the sample used to calculate the amount of training expenditure per person. Both yield essentially the same results, though the tendency of successful firms in the latter to do less training is a little more pronounced.

59. For the multivariate analysis, related strategy and activity questions were grouped and summarized using a principal-component analysis in order to test to see whether there was more than one dimension or any dimension that mattered.

60. The industry analysis grouped respondents into the following classifications: manufacturing, primary, construction, business services, wholesale, retail, dynamic services, and traditional services. The latter two are essentially the classification used by the Economic Council of Canada (1991). Dynamic services are defined here as the remainder of the ECC's dynamic-service category after business services and wholesaling are removed. Traditional services is the ECC's traditional-service category with the retail sector removed.

61. See Hendershott and Huang (1985) for a comparison of the pre-tax cost of equity and debt capital for the United States, Bodie et al. (1993) for Canada. Department of Finance (1991) contains a comparison of the after-tax cost of equity and debt capital for Canada.

62. This matching method captures only a portion of the firms that are contained in the LEAP file, since not all companies in the latter are incorporated. In that respect, firms that are run as a sole proprietorship or partnership were excluded from the matching process and from the survey.

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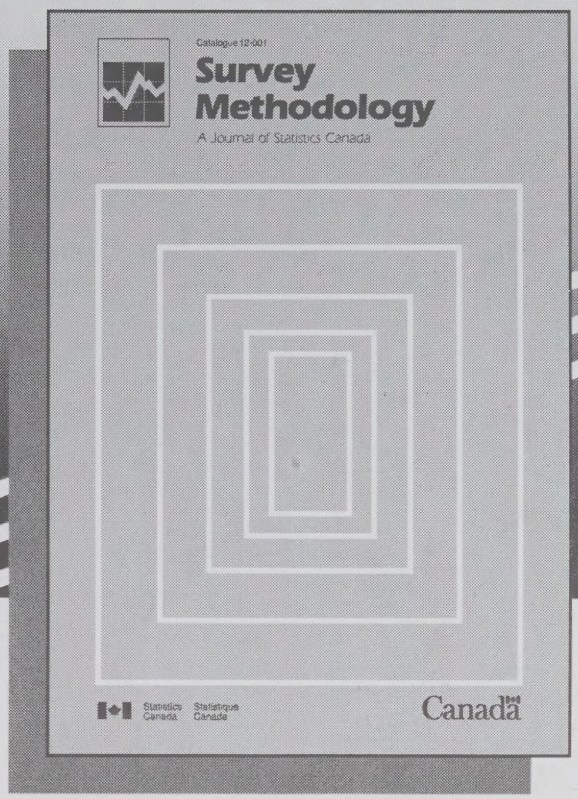

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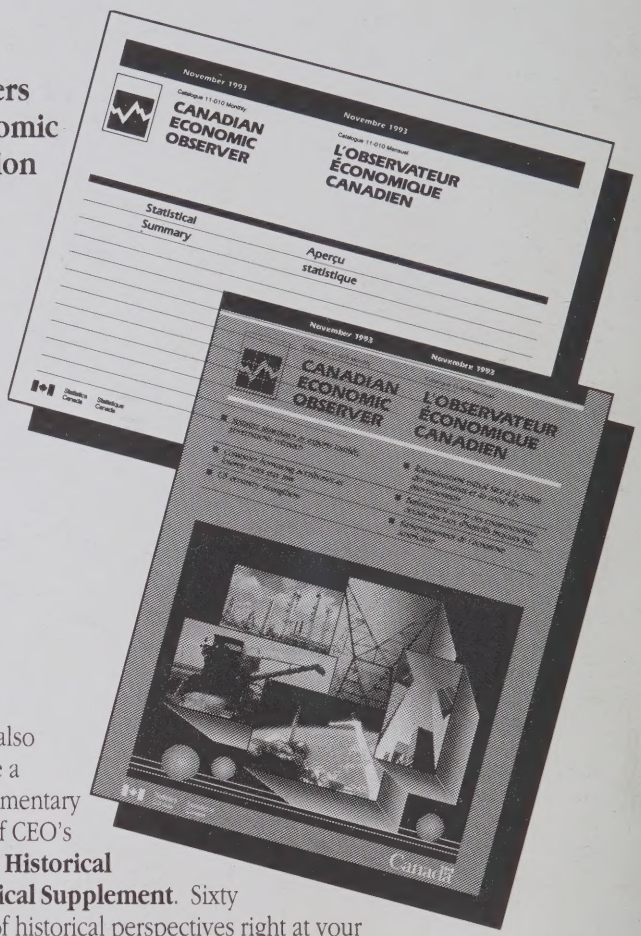

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